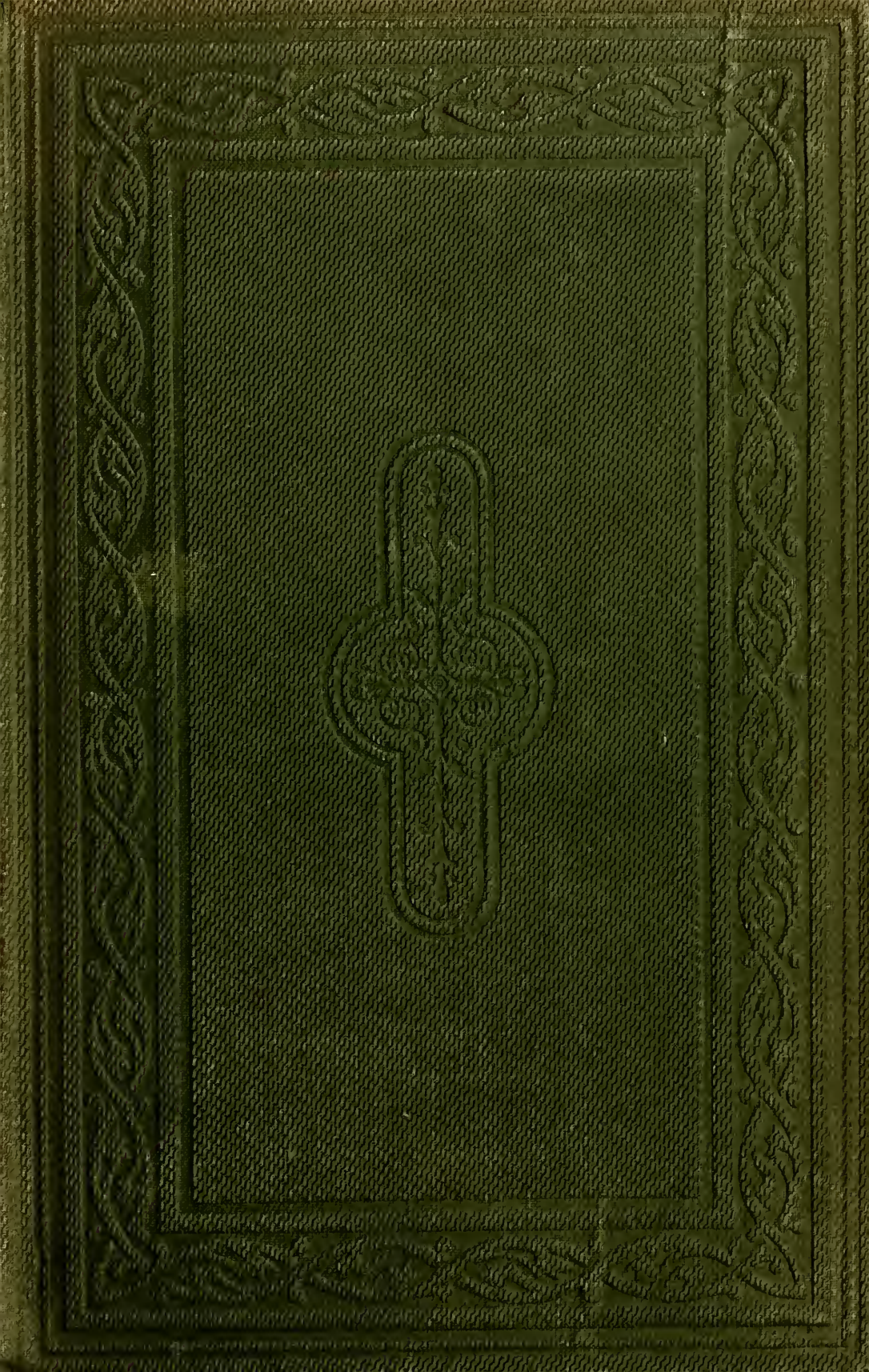

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LOUDON'S

VILLA GARDENER.

THE VILLA GARDENER:

COMPRISING THE CHOICE OF

A SUBURBAN VILLA RESIDENCE;

THE LAYING OUT, PLANTING, AND CULTURE OF THE GARDEN AND GROUNDS;

AND

The Management of the Villa Farm,

INCLUDING THE DAIRY AND POULTRY-YARD.

ADAPTED, IN EXTENT, FOR

GROUNDS FROM ONE PERCH TO FIFTY ACRES AND UPWARDS.

AND INTENDED FOR THE INSTRUCTION OF THOSE WHO KNOW LITTLE OF GARDENING AND RURAL AFFAIRS,

AND

MORE PARTICULARLY FOR THE USE OF LADIES.

Illustrated by numerous Engravings.

By J. C. LOUDON, F.L.S. H.S. ETC.

AUTHOR OF THE ENCYCLOPÆDIAS OF GARDENING, OF TREES AND SHRUBS, AND OF COTTAGE, FARM, AND VILLA ARCHITECTURE AND FURNITURE.

Second Edition.

EDITED BY MRS. LOUDON.

LONDON:

PUBLISHED FOR THE EDITOR, BY

WM. S. ORR & CO., AMEN-CORNER, PATERNOSTER-ROW.

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PRINTED BY WILLIAM TYLER,
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PREFACE.

It was my late Husband's intention, had he lived to prepare a new Edition of his *Suburban Gardener*, to alter the work considerably; by omitting a portion of the Suburban Gardens, and inserting more descriptions of Villas; and, for this purpose, he had Engravings made of several Villas, which he inserted first in the *Gardener's Magazine*.

In preparing the present Edition, I have acted up to Mr. Loudon's intentions as closely as I could,—the principal change which I have made being in the name, which I have altered to The Villa Gardener, as being more suitable to the work in its present form. I have also added numerous Designs for Plant-houses, made expressly for this work, by Mr. Francis Rauch, and a copious Index; and I have given the names of New Plants, and details respecting New Improvements in Gardening, so as to bring the work down to the present time.

J. W. LOUDON.

Bayswater, August, 1850.

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THE

VILLA GARDENER.

INTRODUCTION.

The enjoyments to be derived from a country residence depend principally on a knowledge of the resources which a garden, however small, is capable of affording. The benefits experienced by breathing air unconfined by close streets of houses, and uncontaminated by the smoke of chimneys; the cheerful aspect of vegetation; the singing of birds in their season; and the enlivening effect of finding ourselves unpent-up by buildings, and in comparatively unlimited space, are felt by most people: but these enjoyments are greatly increased by the possession of a garden, in which the progress of vegetation can be watched from day to day; and in which the taste and fancy can be exercised by continually forming new and beautiful scenes.

Before proceeding to the garden itself, we shall endeavour to excite some interest in its favour, and to show the solid advantages which may be derived from a country residence; though on both these topics we shall bestow very few words.

There is a great deal of enjoyment to be derived from performing the different operations of gardening, independently altogether of the health resulting from this kind of exercise. To labour for the sake of arriving at a result, and to be successful in attaining it, are, as cause and effect, attended by a certain degree of satisfaction to the mind, however simple or rude the labour may be, and however unimportant the result obtained. To be convinced of this, we have only to imagine ourselves employed in any labour from which no result ensues, but that of fatiguing the body, or wearying the mind: the turning of a wheel, for example, that is connected with no machinery, or, if connected, effects no useful purpose; the carrying of a weight from one point to another and back again; or the taking of a walk without any object in view, but the negative one of preserving health. Thus, it is not only a condition of our nature, that, in order to secure health and cheerfulness, we must labour; but we must also labour in such a way as to produce something useful or agreeable. Now, of the different kinds of useful things produced by labour, those things, surely, which are living beings, and which grow and undergo changes before our eyes, must be more productive of enjoyment than such as are mere brute matter; the kind of labour, and other circumstances being the same. Hence, a man who plants a hedge, or sows

a grass-plot in his garden, lays a more certain foundation for enjoyment, than he who builds a wall or lays down a gravel walk; and, hence, the enjoyment of a citizen whose recreation, at his suburban residence, consists in working in his garden must be higher in the scale than that of the man who amuses himself, in the plot round his house, with shooting at a mark or playing at bowls.

To dig, to hoe, and to rake, are not operations requiring much skill; and the amateur gardener will, perhaps, chiefly value them for their use in preparing for crops, or in encouraging the growth of crops already coming forward: but the operations of pruning and training trees, when well performed, are not only interesting to the operator at the time, but the plants so pruned or trained afford him pleasure every time he sees them afterwards throughout the season, till the period returns when they must be pruned and trained again. The operation of striking plants from cuttings is performed in a variety of ways, according to the nature of the plants; and may truly be called one of intense interest, both in its performance, and in the expectation of its results. By the great majority of amateur gardeners, cuttings are made and planted at random; and their failure or success is, in consequence, a matter of chance: but a very little scientific light thrown on the subject leads to rules for operating, which will turn chance into certainty in almost every case that can occur to ordinary practitioners; and, consequently, will greatly enhance the pleasure of performing the operation, from the consciousness that the labour bestowed will not be thrown away. We need not here refer to the operations of grafting, layering, or sowing seeds; nor need we mention innumerable other operations which require to be performed in the course of the year, even in the very smallest garden; but we must be allowed to notice the watering of plants, which all persons can enjoy from the earliest infancy upwards. What pleasure have not children in applying their little green watering-pans to plants in pots, or pouring water in at the roots of favourite flowers in borders? And what can be more rational than the satisfaction which the grown up amateur, or master of the house, enjoys, when he returns from the city to his garden in the summer evenings, and applies the syringe to his wall trees, with refreshing enjoyment to himself and the plants, and to the delight of his children, who may be watching his operations? What can be more refreshing than, in a warm summer's evening, to hear, while sitting in a cool parlour, with the windows open, or in a summer-house, the showering of water by the syringe upon the leaves of the vines or fig trees trained under the adjoining veranda, or upon the orange trees and camellias, or other exotic shrubs, planted in the conservatory connected with it? What more delightful than to see the master or the mistress of a small garden or pleasure-ground, with all the boys and girls, the maids, and, in short, all the strength of the house, carrying pots and pails of water to different parts of the garden; and to see the refreshment produced to the soil and plants by the application of the watering-pan and the syringe?

Even the search after insects is a great enjoyment in a garden; and, in fact, opens up an entirely new field of exertion and interest to those who have not before made minute observations in this department of nature. Fifty years ago, the subject of destroying insects was scarcely considered as belonging to gardening; and their eggs, which now every young gardener recognises, in winter glued in rings to the branches of his fruit trees, or in spring

deposited on the back of his gooseberry leaves, passed unheeded through their different stages of development; and the ravages the larvæ committed on crops were considered as inevitable blights, produced by the atmosphere. In the present day, so much of the beauty and the value of the products of all gardens is known to depend on subduing insects, that a knowledge of the subject is considered essential to every gardener: but it is more especially necessary that the possessor of a small garden should know how to keep insects in subjection; both because he is frequently his own gardener, and because insects are more abundant in such gardens than in those of a larger size, which are generally situated farther in the country, sometimes from the comparatively weak and crowded state of the plants, and, in other instances, from the absence of those natural enemies of insects, the small birds.

One of the greatest of all the sources of enjoyment resulting from the possession of a garden is, the endless variety which it produces, either by the perpetual progress of vegetation which is going forward in it to maturity, dormancy, or decay, or by the almost innumerable kinds of plants which may be raised in even the smallest garden. Even the same trees, grown in the same garden, are undergoing perpetual changes throughout the year; and trees change, also, in every succeeding year, relatively to that which is past; because they become larger and larger as they advance in age, and acquire more of their characteristic and mature forms. The number of plants, and especially of trees, which can be cultivated in any garden at one time is necessarily circumscribed; but, if an amateur chose to limit the period during which he cultivated each tree or plant to the time of its flowering with him for the first time, he might, in the course of a few years, more or less in number according to the size of his garden, have had growing in it all the plants in cultivation in the open air in Britain, with the exception of a few of the larger of the forest trees; and even these he might also have flowered, by making use of plants raised from cuttings or layers, or of miniature trees, made by ringing and rooting the branches of old trees in the Chinese manner. Independently, however, of the variety and change resulting from the plants cultivated, every month throughout the year has its particular operations and its products: nay, it would not be too much to say, that during six months of the year a change takes place, and is perceptible, in the plants of a garden, every day; and every day has, in consequence, its operations and its products. Even in winter, there is still something to do in every garden, however small may be its extent: the walks require to be kept in order, and some plants must be protected by litter or matting; and, if there should be no trees to prune, no ground to dig, no manure to collect or to barrow out, no dung to turn and prepare for hotbeds, there is, at all events, the preparation of names or numbers for plants; the cutting and painting of rods to tie them to; the sorting of seeds; the making of baskets; and the search after information on the subjects of plants and their culture, in books.

But imagine that to the villa garden there is added a small green-house, or a flued pit! What a source of amusement and interest does not either of these garden structures hold out to the amateur gardener, during the winter and spring! Exactly in proportion as, in autumn, the out-door operations become fewer, the in-door operations of the green-house or pit become more numerous; and, if the expense of a green-house should be objected to, much of the produce of the green-house may be procured, at half the expense, by

the use of a pit, which requires no other glass than the sashes which form its roof. The amusement and the products which such a pit, in the hands of an ingenious amateur, is calculated to afford, are almost without end. Small salading may be produced in it throughout the whole winter. Chicory roots (though this may be accomplished in a common cellar) may be made to throw out their blanched leaves, which form the most delightful of all winter salads, at least to our taste; tart rhubarb or sea-kale may be forced in pots; as may parsley, mint, and other herbs. Bulbs may be forced; and a bloom of China roses may be kept up throughout the winter. But, perhaps, the most important use to which such a pit can be applied, in a small garden, is to preserve throughout the winter, and to bring forward in spring, pelargoniums, fuchsias, salvias, calceolarias, verbenas, and other fine exotic flowers, and also half-hardy and tender annuals, for turning out into the flower-garden, or into the miscellaneous border, in the beginning of summer.

These are a few of the absolute enjoyments to be derived from a country house and garden; and we shall next notice another, which flows from the same source, but which may be called relative or incidental. The opportunity which a garden affords to its possessor of acquiring a scientific and practical knowledge of plants is a source of great interest, not only in his own garden, but wherever else plants may come in his way; whether in a wild state, in gardens, exposed for sale in markets, or delineated and described in books. Another source of incidental enjoyment is that which will arise from the acquirement of some knowledge of gardening, and of rural architecture as an art of design and taste. How great a source of enjoyment this is, and how great an interest it enables its possessor to take in landscapes, and in architecture, generally; or, in short, wherever he sees a house or a tree; those only can know who have gone through the necessary preparation.

There is scarcely such a thing to be found as a lady who is not fond of flowers; but it is not saying too much, to affirm that there are very few ladies indeed who are competent to lay out a flower-garden; though the skill required to do so is within the capacity of every woman who can work or embroider patterns for the different parts of female dress: and, supposing a female to have grown up without the slightest knowledge of the art of working a pattern, or of tracing out a flower-garden, it would certainly be much easier for her to acquire the latter art than the former. The result, in both cases, might be obtained almost without instruction, provided the party desiring to form the dress, or the flower-garden, had a clear idea of what was wanted. But, while every female understands this in regard to dress, and, consequently, can succeed in adapting embroidery to her clothes, whenever she finds it necessary, very few have any distinct idea of what a flower-garden ought to be; and, hence, we seldom or never see them produce a satisfactory design for one, without the aid of a professional man. We venture to assert, that there is not any lady who can design a pattern, and embroider a gown, that might not, in a few hours, be taught to design flower-gardens with as much skill and taste as a professional landscape-gardener; and so as to produce incomparably better results than are now generally to be seen in the flower-gardens of the great majority of British country residences.

If we can succeed in rendering every lady her own landscape-gardener, which we are confident we can do, we shall have great hopes of effecting a general reform in the gardening taste, not only of this country, but of every

other for which this work is calculated: and we intend it for circulation in the temperate climates of both hemispheres.

Next in influence on society, in every country, to the female sex, is the class of teachers; including under this class the two orders, ministers of religion and schoolmasters. The instruction of these orders in the science and practice of gardening shall be one of our principal aims in the composition of this work, as well in the hope of adding to their own resources for comforts and enjoyments, as of enabling them to infuse a taste for these comforts and enjoyments into the minds of the rising generation. We can hardly conceive any rural pursuits more adapted for a clergyman than natural history and gardening: and what can better afford a relaxation to the schoolmaster, from the arduous and sedentary duties of his profession, than the cultivation of a field of useful vegetables, and of a garden of curious and ornamental plants, not only for his own amusement, but for the instruction of his pupils? A garden and a field are, in our opinion, as well merited by the schoolmaster as a glebe is by the clergyman; and we trust they will, in a short time, be considered as no less indispensable in Britain (in the establishment of a national system of education) than they already are in most parts of Germany, and in many parts of North America.

We might enlarge here on the great advantages which would result from bringing up children with a taste for garden pursuits and natural history; and the vast influence which this is calculated to have on their future happiness, and on the welfare of society, by enabling them, instead of passing their leisure hours in a manner degrading to human nature, to interest themselves in recreations both agreeable and useful: but the field is too wide to be entered on within our limits, and we must therefore leave the subject to be worked out by the imagination of our readers.

Much of the enjoyment of a country residence depends on knowing what to expect from it; what, in short, is consistent, and what is inconsistent, with its limits and its local situation. We have shown, in the *Encyclopædia of Cottage, Farm, and Villa Architecture* (p. 8), that all, in the way of house accommodation, that is essential to the enjoyment of life, may be obtained in a cottage of three or four rooms as well as in a palace; and we shall prove, in this work, that a suburban villa, with a very small portion of land attached, will contain all that is essential to happiness in the garden, park, and demesne of the most extensive country residence. Let us briefly make the comparison. The objects of the possessors of both are the same: health, which is the result of temperance and exercise; enjoyment, which is the possession of something which we can call our own, and on which we can set our heart and affections; and the respect of society, which is the result of their favourable opinion of our sentiments and moral conduct. No man in this world, however high may be his rank, great his wealth, powerful his genius, or extensive his acquirements, can ever attain more than health, enjoyment, and respect. The lord of an extensive demesne seeks after health by hunting, shooting, or other field sports, or by superintending the general management and cultivation of his estate; the lady seeks recreation in her pleasure-ground, or in airings in her carriage; and both find their enjoyment in their children, and in their house and garden, and other surrounding objects. Now the master of a suburban villa finds health in the change it affords from his occupation as a citizen; or if he has retired from business, in

the personal cultivation of his garden. He also finds enjoyment, not only in his family, friends, and books, but in his garden, and in the other rural objects which he can call his own, and which he can alter at pleasure, at a trifling expense, and often with his own hands. It is this which gives the charm of creation, and makes a thing essentially one's own. Every one must have felt the infinitely greater pleasure which is enjoyed from the contemplation of what we have planned and executed ourselves, to what can be experienced by seeing the finest works belonging to, and planned by, another. Our own work is endeared to us by the difficulties we have met with and conquered at every step: every step has indeed its history, and recalls a train of interesting recollections connected with it.

We shall arrange this work in books; and shall treat in succession of the general principles which should guide an amateur in the choice, laying out, and planting of a country residence; and of the planting and management of the villa kitchen-garden, orchard, flower-garden, pleasure-grounds, and shrubbery, and of the villa farm; concluding the whole with a monthly calendar of the management of villa residences.

BOOK I.

ON THE GENERAL PRINCIPLES WHICH SHOULD BE TAKEN INTO CONSIDERATION PREVIOUSLY TO LAYING OUT AND PLANTING A VILLA RESIDENCE.

1. *Preliminary observations.*—Though it does not fall to the lot of every one who inhabits a villa, to build the house, and lay out the grounds himself; yet most people who have a country residence, have the power of either choosing one for themselves, or at least of making such alterations and improvements as may render their abode suitable to their own taste or convenience. It is, however, to those who may wish to form an entirely new villa residence for themselves that we chiefly address ourselves; as such a case will bring the greatest number of general principles into action, and as it will be easy for any one who wishes to apply these principles only partially, to select those which happen to be suitable to his particular case.

2. *The choice of a situation.*—The first and most important consideration for every one who designs to inhabit a country residence is its situation; and this is as necessary to be attended to by those who intend to inhabit a villa on the very smallest scale, as it is by those who contemplate possessing one on the largest; for a false step committed in either case, in the choice of a situation, may be so difficult afterwards to retrace, as to be almost impracticable; and thus, nearly all the comfort reasonably anticipated from the enjoyment of a country residence, may be destroyed. How much the locality, the aspect, and the surrounding circumstances affect the culture of a garden, of even a single perch in extent, can hardly be conceived by those who have not paid considerable attention to the subject.

3. *The healthiness* of the situation intended for a dwelling is obviously the first and most important consideration. Situations differ in regard to health-

iness, not only with reference to the constitution of human beings generally, but they differ as to their suitableness for persons affected with, or constitutionally liable to, particular diseases. The subject embraces elevation, character of surface, exposure, aspect, soil, subsoil, climate and character of the weather, water, and a general capacity for improvement.

4. *Elevation.*—In the neighbourhood of towns, where the air is always more or less charged with smoke, an elevated site will always be found to have the clearest atmosphere; and, for persons in good health, it is generally allowed, that the atmosphere should not only be free from impurities, but free from more than the average quantity of water held in suspension in the given climate. In valleys and low situations, there is always a larger proportion of water in the atmosphere than in situations which are high, and have a dry soil and subsoil; and for these reasons, an elevated situation, for strong healthy persons, provided all other things be agreeable, should be selected. On the contrary, where the constitution of the intending occupant or his family has a tendency to consumption, a low situation, with a somewhat moist atmosphere, is preferable; or, in the case of asthma, an intermediate position, sheltered, and with a comparatively warm climate. In choosing a situation with reference to the height of the surface, its absolute elevation is sometimes of less consequence than the facilities which it affords for the free circulation of air. A situation may be hilly, and yet so covered with high trees, that the air, except in winter, when the trees are not in leaf, becomes stagnated and charged with watery exhalations from the ground, which is kept damp by the shade, and by the transpiration from the leaves of the trees. Dry ground, on a lower level, but open and exposed to the influence of the sun and the winds, is obviously healthier than a situation of this description. A situation may also be elevated, and yet not healthy, from its soil being naturally damp; and, on this account, if the walls of the house have not been built in such a manner as to prevent the damp from ascending through them, it may be inferior in point of healthiness to a lower situation where the soil is dry.

5. *A low situation near the sea*, or close on its shore, is almost always healthy; whether on a coast, like that of the west of England and Scotland, exposed to moist winds, or like that on the east of both countries, which is chiefly exposed to dry winds. The reason seems to be, that the air, in both cases, does more good by its bracing properties, than injury by the excess of moisture in the one case, or the deficiency of moisture in the other. On the other hand, elevated situations on surfaces covered with peat bog, or with marshy, wet, springy soil, are generally unhealthy. The banks of a sluggish river are unwholesome, while those of a river with a rapid current are the contrary. The beauty of the view or prospect, or the circumstance of there being or not being a prospect, is a subject of consideration so obviously depending on elevation, that it only requires to be mentioned. Scarcely any object that can be created within the boundary wall of a small spot can compensate for the want of a distant prospect, to a general admirer of landscape; and, on the contrary, no distant prospect, however beautiful it may be, can compensate to a lover of plants, for the want of a good garden: the *beau idéal* is to unite both; but, as this can rarely be done, it is for the proprietor to seek after the nearest approximation to it that he can find, or to choose which of these desiderata he considers preferable.

6. *Character of surface.*—An irregular surface is always attended by an

irregular climate. This is occasioned by the different influence of the sun on surfaces of different degrees of slope; and by the different degrees of interruption which hills or irregularities of different shapes and sizes give to the wind. There is scarcely such a thing as a perfect calm during bright sunshine in a hilly irregular country; because, while on one side of the hill the sun generates an intense heat, on the opposite side of it, the soil and air remain cold. For persons of narrow chests and weak lungs, a hilly situation, therefore, is far from being desirable; for, independently of the irregularity of the climate, the fatigue of walking up and down hills or slopes, is greater to such persons than it is to others. The most even and regular climates are to be found over the most even and regular surfaces. Hence, other circumstances being favourable, a level plain, at a distance from mountains, generally affords the mildest and best climate for invalids. This is also the kind of situation in which a kitchen-garden is least subject to be injured by winds; and, if the subsoil admits of being thoroughly drained, and is not so near higher grounds, or a large surface of water, as to be liable to be inundated by night dews from them, it is preferable to every other.

7. *The character of the climate of a situation near the sea*, near a lake, or near a broad river, resembles in some respects, that of an irregular surface; for, the effect of the sun on the dry soil being very different from its effect on the water, a current of wind is created, in consequence of the difference of temperature. The air, in such situations, is milder in winter, in consequence of the heat given out by the water; and cooler in summer, in consequence of less heat being given out by the water than by the dry ground, and of the breezes which arise from the tendency to an equilibrium in volumes of air of different temperatures. Natural or accidental hollows, when they have an outlet for drainage, and for the escape of the heavy air which accumulates in them, afford sheltered, and sometimes very picturesque, situations for building in. Old stone quarries, gravel pits, and chalk pits are of this description; and, when they are open to the south or south-east, with, perhaps, a prospect in front, the most delightful little places may be made of them that can well be imagined.

8. *Exposure.*—All elevated situations are more exposed to the prevailing winds of a country than plains; but, as the highest winds of any particular locality generally blow from one direction only, situations that are equal in point of elevation may be quite different in point of exposure. In the neighbourhood of London, where the most disagreeable winds are from the north-east, a house placed on that side of a hill will be more exposed to cold winds than on any other side. The exposure, also, is very much affected, in irregular hilly situations, by the influence of other hills, in directing currents of wind out of their natural course; so that while the north-east side of an isolated hill may be the most exposed side, the south or the north side of a hill, situated among other hills, may be equally exposed as, or more so than, the north-east side. Though a situation exposed to the prevailing winds of the district can seldom be considered the most desirable for a dwelling-house, and never for a garden, unless it be one where none but the hardiest plants are to be grown, yet there are exceptions, arising from local circumstances: for example, in the immediate neighbourhood of smoky towns, such as Manchester or Birmingham, any situation on the side of the town most exposed to the prevailing winds will be the best, as being the most free from smoke.

9. *Aspect.*—By the aspect of ground, is generally understood the direction of its surface relatively to the different points of the compass. A south-eastern aspect, or that in which the surface of the ground has an inclination to the south-east, is, in Britain, generally considered the best, because it is the warmest. The winds from the south-east are never very violent: they are neither so cold nor so dry as those from the east, and they occur less frequently than winds from any other quarter. On a hill side, especially if the hill be high, the aspect least subject to high winds is decidedly to be preferred; but, in a flat country, a slight inclination of the surface, in any direction whatever, is a matter of no great consequence. An aspect to the south is, in some cases, less favourable than one to the north: for example, when the objects which are seen from the windows of the house are near; as, in that case, the worst side of the trees is seen, and that side will be wholly in shade, during the most agreeable part of the day, in winter and spring. An aspect to the north, on the other hand, shows the best side of the trees; the light side of all objects, during winter and spring; and the greatest variety of light and shade during summer, and, in short, throughout the year. In the choice of a situation for a house and grounds, the views from the house should not alone be taken into consideration. Recreation in the open air is one of the great advantages of a country residence; and an aspect sloping to the south will admit of the grounds being walked in during winter, when, with one sloping to the north, they will be covered with snow, frost, or moisture. Land sloping to the south may also be much sooner walked on after rain, at all seasons; and it is a great source of enjoyment to persons living in the country, and fond of seeing the progress of vegetation, to examine their gardens and grounds immediately after a shower, while the trees and plants are in the very crisis of excitement, produced by a liberal supply of water after a long drought. Every one knows that a garden sloping to the south or south-east not only produces earlier crops, whether of culinary vegetables, fruits, or flowers, than any other, but that it may also be walked in through the greater part of the winter. Grass fields open to the south produce earlier pasture, and the corn grown on arable land so situated ripens sooner.

10. *Soil.*—Though the soil, in small spots, may be very much changed by art; and though, in suburban gardens of only two or three perches, the soil may be entirely artificial, and consequently be made, in a great measure, what the proprietor wishes it; yet it is always desirable, where it can be done, to choose a soil which is good by nature. If we were asked what was the single quality in a soil, the predominance of which would entitle it to be called good, we should say friability. With reference to a small dwelling-house, and also to a small garden, this quality is more especially desirable, since it will almost always be found easier to alter the texture of a dry soil so as to render it retentive of moisture, than to drain and alter the texture of a wet soil so thoroughly as to give it a character of dryness. A dry soil may either have sand or gravel as its prevailing quality: the gravel affords the best foundation for a house, and the sand, the best subsoil for a garden. A soil, however, may be naturally either sandy or gravelly, and yet not be dry, from being placed on a retentive subsoil, or from the subsoil being connected with the watery subsoil of higher grounds. In the case of a retentive subsoil, the surface soil, though sandy in its original nature, from being long saturated with surface water, and from that water containing vegetable matter,

will probably have become black and peaty in appearance; and unless the water can be thoroughly got rid of by draining, such soils are decidedly unfavourable both for building and gardening. As chalky soil is almost always dry, it is favourable for building on; but, unless it has a considerable depth of soil over it, the expense of forming suitable garden ground is greater than on most other soils. A chalky subsoil in a valley is generally covered by a depth of loam on the surface, which loam forms one of the very best soils for growing every description of vegetables in the highest degree of perfection. Chalky soils, though dry, are invariably colder than most others, from the whiteness of the chalk not absorbing readily the sun's rays, and from the slowness with which a dense body like chalk is penetrated with the rain of summer, which is one of nature's chief modes of warming subsoils. A strong clayey soil is not to be desired; because it will cost a great deal to render it fit for garden purposes; and because it forms a dangerous foundation for small houses built on its surface, on account of its liability to shrink during the great heats of summer, and to expand when remoistened by rains, thus throwing the walls of the house out of their perpendicular. In various parts of Middlesex, to the north of London, brick cottages may be seen built on strong clays, with walls leaning to one side, or bulging out, or with deep cracks in them produced by this cause. However, where the foundation of the house is sunk to the depth of 3 ft. or 4 ft., or where the surface of the clay is covered with a thick coat of gravel, small stones, or sand, or where it is paved, or laid with flag-stones, to the breadth of 3 ft. or 4 ft. all round the house, this disadvantage of a clayey soil will not be experienced; because the soil immediately connected with the foundation is thus, in a great measure, protected from atmospherical changes. A strong clayey soil can be walked on with pleasure fewer days of the year than any other, on account of its retentiveness of moisture; and it is the most expensive to cultivate, from its being alternately too hard and too wet. It is, therefore, the very worst kind of soil for houses having an acre or two of ground attached; and it must obviously be the very worst that can occur, either for kitchen-gardens or flower-gardens. There is a description of clayey soil which is almost always soft and moist, because it abounds in springs; and, though no soil whatever, in its natural state, can be worse for building on, or for gardening, than this moist clay; yet, if it admits of being thoroughly drained, it may be rendered better for either purpose than the tough strong clay above mentioned. The reason is, that this springy clay, from the very circumstance of its being springy, or, in other words, so porous as to admit of water rising up through it, is less retentive of moisture, and more freely and easily worked, when drained, than the other. In some cases, however, the springs which rise from the subsoil cannot be effectually cut off, so as to render the surface perfectly dry; by which is meant, perfectly free from all moisture, but that which falls on it in the form of rain or snow. Loamy soils (which, for our present purpose, it will be sufficient to consider as intermediate, either between sand and clay, or between peat or soft black earth, and chalk) are not unfavourable for building on, and are highly favourable for every description of gardening. A sandy loam, with rock or sand, or even gravel, for a subsoil, may be considered as the most favourable of all for gardening purposes, and, indeed, as the best soil for a country residence.

11. *Subsoil.*—The substratum on which the surface soil rests, is, both for building and gardening, of more importance than the soil itself. No surface

soil whatever, on a wet or springy subsoil, or even on a soil not springy, but clayey and retentive, can be rendered fit for either garden or field cultivation without considerable expense. On the other hand, any soil on a subsoil not absolutely retentive, and not too open, may, at a moderate cost, be highly improved. Rock, of almost every kind, forms a favourable subsoil, because it is generally neither too retentive nor too porous: it is proverbially the best foundation for building on; and if the surface soil is of sufficient depth, it is fit for every purpose of cultivation.

There are some descriptions of decomposing sandstone rock, impregnated with oxide of iron, which form unfavourable subsoils for the culture of fruit trees, and produce canker in them; but such subsoils can be freed from the bad effects of the iron to a sufficient depth for the culture of herbaceous vegetables, by frequent dressings with quicklime. Dry gravel forms a good subsoil; but, unless care be taken not to found the walls of a house too deep, and to have a perfect exterior drainage, the surface water will, in rainy seasons, find its way into the floor of the sunk story, if there be one. A gravelly subsoil is not the best for a garden; because, in the summer season, it absorbs too rapidly the water of the surface soil. On marshy or peaty soils or subsoils, no house whatever should be built; but such surfaces and subsoils may be rendered peculiarly suitable for certain descriptions of garden culture, by judicious draining, or by a command of water combined with the power of laying the whole dry to a certain depth at pleasure. In the case of irregular rocky surfaces such marshy or peaty spots are not unfrequent; and, when the house can be placed on a rocky knoll, and the garden formed in an adjoining hollow, the concurring circumstances may be considered favourable.

12. *The kind of climate* of the given locality is the circumstance of a permanent nature which, next to elevation and soil, ought most to influence the choice of a country residence. In warm climates, an open and airy situation is preferable to a close and sheltered one; and in hot climates, such as in Australia, situations with such an inclination of surface as is favourable for shade, will be sought rather than those with surfaces so inclined as to meet at a more direct angle the sun's rays. In cold climates, sheltered situations will be preferred, for the sake of warmth; and, in moist climates, elevated dry situations, open to the south, and exposed to the breeze, with a dry subsoil, and good natural surface drainage, afford the only opportunities of counteracting or diminishing the natural inconveniences always attendant on continued rains and fogs. In almost every situation, the wind prevails, throughout the year, more in one direction than in all the others; and, hence, it is obvious that such winds must blow the smoke of the town or city, throughout the greater portion of the year, in the opposite direction. It will be borne in mind, however, that the natural currents of the wind, in any given locality, are always more or less modified by inequalities of the surface; and these inequalities, when they are so great as to become hills and mountains, will materially affect the theory here laid down. In such cases, the observation of what actually takes place in nature will form the best guide. A large river, in a tolerably straight direction, more especially if acted on by the tides of the sea, has always considerable influence upon the direction of the wind, from the difference which exists between the temperature of the surface of the water, and that of the adjoining land and houses. In the heat of summer, the river has a tendency to create a current of air by its coolness, and

in winter by its warmth; and this action is greatly increased when the motion of the river is rapid, or when it rises and falls with the tide.

13. *Water.*—This element, so essential both for the house and garden, is not likely to be lost sight of; because, from the earliest times, it has been an understood requisite both for a dwelling and a garden. Hence, as cities and towns formerly were placed by a river, or on some inlet of the sea, so detached dwellings were placed by brooks or springs. With the present improved means of procuring water by boring, or collecting it on the surface and preserving it in tanks, few difficulties respecting the procuring of water can occur. It must, however, be taken into consideration, that where there is a garden, much more water is required than where there is only a house.

14. *External appearance and architectural style.*—Many persons who have not had much experience in the choice of a house, are captivated by the exterior; and are more influenced by picturesque effect, than by any property in the dwelling connected with habitableness. One person is an admirer of the Gothic; without considering that, unless the number of windows in such a house is greater than in a building in the Roman or Italian style, the rooms will be ill-lighted, from the thickness of the mullions, and the smallness of the frames; and probably also not well ventilated, from the defective manner in which Gothic windows generally open. Some prefer a cottage with latticed windows, and surrounded by creepers; not considering that the rooms in such buildings are very frequently low, ill-lighted, and ill-ventilated; the floors subject to the dry-rot, and the walls to damp: for, notwithstanding the beauty of flowering creepers, there is not a single kind of creeping plant which will grow against a house, that does not make the walls damp, with the exception of ivy. Some prefer a house with a veranda all round it; and no doubt such an appendage will keep the house warmer in winter, and cooler in summer, and will afford a dry walk during rain; but those who take a house with a veranda, which they are, of course, bound to keep in repair, should first well consider if it admits sufficient light to the rooms on the ground-floor; and secondly, whether it is well put together, and made of durable materials. Some houses which are surrounded by arcades, and which are exceedingly handsome and architectural externally, are yet more gloomy within than their possessors would, perhaps, like to acknowledge.

15. *A thatched cottage* is an object of admiration with many persons who have not had much experience of country life; and, accordingly, we find several in the neighbourhood of London. Such cottages have, perhaps, the gable end covered with ivy, the chimney-tops entwined with Virginian creepers, and the windows overshadowed by roses and jasmines. The ivy forms an excellent harbour for sparrows and other small birds, which build there in quantities in spring and early in summer, and roost there during winter. In June, as soon as the young birds are fledged, all the cats in the neighbourhood are attracted by them, and take up their abode on the roof of the house every night for several weeks; the noise and other annoyances occasioned by which we need only allude to. We say nothing of the damp produced by the deciduous creepers and the roses, as we have already mentioned that: but we must here notice another evil, which is not so obvious, though quite as serious, and this is, the numerous insects generated in the decaying thatch; and more especially that generally-disliked creature, the earwig, which in autumn, whenever the windows are open, comes into the house in quantities, and finds

its way into every closet, chink, piece of furniture, and even books and papers. All cottages of this kind harbour snails and slugs in the ivy, and spiders under the eaves of the thatched roof; and wherever there are spiders, there are also abundance of flies. As there is always a garden attached to such cottages, it is almost certain, if on a clayey soil, to abound in snails, slugs, worms, and, if the situation is low, perhaps newts. Some of these, from the doors, or at all events the back-door, being generally kept open, are quite sure to find their way not only into the kitchen, but even into the pantry and cellars. Slugs, when very small, will enter a house through a crevice in the window, or a crack in the door; find their way to the moist floor of the pantry or the cellar, and remain there for weeks, till they are of such a size that they cannot retreat. There are few persons indeed who do not experience a feeling of disgust at seeing the slimy traces of a slug in any part of their house, not to speak of finding them on dishes in which food is kept, or even on bread; or at discovering an earwig in their bed, or on their linen. The kitchen, in low damp cottages of every kind, almost always swarms with beetles and cockroaches, and the pantry with flies; while, from the closeness and want of ventilation in the rooms, it is almost impossible to keep fleas, &c., from the beds. If a large dog be kept in or near the house, as it frequently is, or if a stable or cow-house be near, the fleas from the dog, the horses, or the cows, which are larger than the common kind, will overspread the carpets, and find their way to the sofas and beds. Having lived in cottages of this kind ourselves in the neighbourhood of London, we have not stated a single annoyance that we have not ourselves experienced; and we have purposely omitted some. Two of these, offensive smells and rats, are the infallible results of the want of proper water-closets and drainage; but these evils, great as they may seem to be, are much easier to remedy than the others already mentioned, which are, in a great measure, inseparable from the kind of house. Two others, the danger of setting fire to a thatched roof, and its liability to be injured by high winds, are sufficiently obvious; but it would hardly occur to any one, who had not lived in a house of this description in the neighbourhood of London, that a thatched roof is, of all roofs, the most expensive, both when first formed, and afterwards to keep in repair. A plumber or a slater, to repair a lead or a slate roof, may be found everywhere in the suburbs of large towns; but a professional thatcher must be sent for from the interior of the country. For example, the nearest cottage thatchers to London are in the Hundreds of Essex on the east, and in Buckinghamshire on the west. We have dwelt more particularly on the evils incident to a thatched cottage, because in it, all cottage annoyances exist in an extreme degree; but the truth is, that all the cottages which have not their ground-floors so much elevated above the surrounding surface as to be perfectly dry, and their rooms lofty and well lighted and ventilated, are subject to the same evils, though not quite to so great an extent. Notwithstanding all that we have stated, we do not recommend our readers never to take a thatched, or other fancy or ornamental cottage; we only wish to point out the inconveniences and extra expense to which their doing so will render them liable. We think we may safely assert that the same family that would want two servants under ordinary circumstances, would require three in a cottage of the kind we have been describing.

16. *The kind of country house least liable to inconvenience* is one that stands

high, dry, and free; that is compact in its general form; that has the diagonal line of its general plan south and north, so as to obtain the sun on every window, on some part of every day that it shines, throughout the year; or, in other words, that has no front or side pointing directly either east, west, north, or south; that has the rooms, and especially the kitchen story, lofty, and well lighted and ventilated; that has a secure roof of slate, lead, or flat tiles; few creepers on the walls; and, that is not choked up with trees and bushes. These conditions being complied with, the architectural style of the building may be left to the taste of the occupant.

17. *As the cubic form* is known to enclose more space with the same quantity of walling and roof than any other, so it is an established rule, that a house square in the plan is preferable in all that regards comfort, habitableness, and economy of heating, keeping clean, and in repair, to one which is irregular in its plan. The next best form to a square is that of a parallelogram; and the worst form that can be adopted is that of a long, narrow, irregular building. A square house is more compact within, and, from its form, it is warmer in winter and cooler in summer than any other; it is more easily heated; it has less space occupied by passages, and is, consequently, more easily cleaned; and, externally, it exposes less surface to the atmosphere, and is, consequently, more easily kept in repair than any other. When economy is the main object, therefore, a square house ought to be chosen; and, that it may combine architectural beauty with economy, both in first cost and future management and repairs, one should be chosen in which the same description of brick or stone, the same style of workmanship, the same magnitude, kind, and disposition of windows, the same facings to them, the same kind of cornice, and, in short, the same architecture, is adopted on all the four sides. Above all things, as a matter of taste, a house ought to be avoided which has any one of its sides decidedly inferior to the rest, in respect either to architectural design or execution. We should say, also, avoid, in point of habitableness and comfort, every house, the diagonal line of the general plan of which is not south and north; were it not that this maxim would condemn all those houses which have been built along, and parallel to, streets or roads which run directly east and west, or north and south. Unfortunately, the custom of placing small country houses that are near streets or roads, with one of their sides parallel to that street or road, and without any reference whatever to its direction, is almost universal, even where there is a distance of 100 yards or more between the road and the house, though it is productive of two serious evils, which admit of no remedy. The one is, that the opposite side or front of the house to that which faces the road is considered as the back, and is, therefore, generally designed and finished in an inferior style: and the other is, that no attention can be paid to placing the diagonal line of the plan of the house due south and north; and that, whether this is the case or not, depends on the direction of the road, and not on the will of the builder. The latter is much the greater evil; for so numerous are the advantages of this disposition of the plan, in point of solar light, warmth, ventilation, and cheerfulness, and even dryness and healthy vegetation in the garden or adjoining grounds, that, in our opinion, it ought to be made the governing principle in the placing of every detached house, whatever may be the direction of the road to which the house may be said to belong.

18. *The principal disadvantage of a square house*, is, that it is said, by some architects, to afford less architectural beauty than any other form, from the sameness of the general shape; but this is partly a mistake, and is chiefly believed to be true by such as consider variety to be one of the main beauties of architecture. Now, our opinion is that variety, however prominent a beauty it may be in landscape, is only a subordinate one in architecture; and that the grand characteristic beauties of that art are magnitude and symmetry. We would not exclude variety; on the contrary, we would produce it to as great an extent in the details as was consistent with symmetry; and, of any two buildings equal in magnitude and symmetry, we should say that the one which possessed the greater amount of variety was the most beautiful. Two great beauties in architecture, and without which an edifice can hardly merit to be called architectural, are the appearances of solidity and of magnitude. Now, no form whatever gives the appearance of solidity to so great an extent, in proportion to the quantity of matter employed, as the square or the circular form. Both these forms are equal in point of solidity; but the square (the quantity of matter being the same) has greatly the advantage in point of magnitude, by presenting, especially when two sides are seen at once, a much greater surface to the eye. A building in the form of a parallelogram, if seen only in front, may have the appearance of magnitude; but, when one end is seen, and that is found to be narrow, the impression of the want of solidity is immediately felt in a high degree, and the impression of magnitude is proportionately diminished. Hence, a building in the form of a parallelogram, in whichever manner it may be viewed, is never so satisfactory as one in the form of a square, or cube. Now, that a square, or cubic, building not only possesses, by the nature of its form, the essential and fundamental architectural beauties of solidity, magnitude, regularity, and symmetry, but also may be made to display the accessary beauties of variety, harmony, character, and style, might be proved by various examples; but it may be sufficient here to refer to the Gothic and Elizabethan mansions of former times; the noblest of which, and those which make the greatest figure in the history of our domestic architecture, were almost always built either in squares or quadrangles, or in the form of three sides of a quadrangle.

19. *In choosing a house that is irregular in the plan and elevation*, there are some advantages, but many disadvantages. The advantages are, that, in particular situations, particular distant prospects may be better displayed; and that in all situations, even on a flat surface, a greater variety of home views, that is, views within the grounds, may be created. This, it is obvious, is to be effected by placing the rooms in such a way that the principal windows in them will look on the view at a right angle. The disadvantages of an irregular house are, that it is always colder in winter, and warmer in summer, than a square house, from the exterior surface of almost every room being exposed to the weather on two or more sides; whereas, in a square house, only the corner rooms are exposed on more than one side. The chimneys in an irregular house do not draw so well, because the greater part of them are in the outside walls. On account of the great surface both of walls and roof, and of the greater number of gutters in the latter, it is clear that irregular houses must cost more at first, and require more to

keep them in repair, than square, or parallelogram, houses; the quantity of decoration on both being equal.

20. *Laying out and planting.*—However paradoxical it may seem, it is nevertheless true, that the difficulties of building, planting, and gardening, on a small scale, so as completely to attain the objects in view, are greater than on a large one. This will be found acknowledged by the late eminent landscape-gardener, Mr. Repton, in various parts of his works; and it is also well-known to every architect, and to every gentleman's gardener who has been accustomed to lay out grounds. There is scarcely an architect who does not find it much easier to satisfy himself in devising a design for a mansion, than one for a cottage residence; or a landscape-gardener, who would not have more confidence of success in laying out and planting a park of a thousand acres, than a ground plot of half an acre. The difficulty, in the case of small places, arises from the deep consideration required to produce the greatest possible result from very limited means. In building or planting on a large scale, the means are generally ample; and, if not unlimited, they are, at least, frequently indefinite: the results obtained are, therefore, generally considerable, and such as to afford ample enjoyment to the possessor. Should they fail of this, however, his wealth and his resources will enable him to alter, amend, and improve, till he has succeeded to his wishes; or, should he ultimately not succeed, will prevent him from being ruined by the attempt. The planner of a small place, on the contrary, whether it is for his own occupation, or for that of another, undertakes a task of great moral responsibility; since the result may either be inadequate to the means employed, and thus time and money which can ill be spared may be thrown away; or the expense may be greater than was desired, or could be afforded by the party, and might thus blight his fortune, and, consequently, mar his prospects of happiness. In short, when an artist undertakes to arrange a country residence on the smallest scale, he may be considered as intrusted with the whole of what his employer can afford to expend in that manner; while, on a large scale, he is only intrusted with a part. Hence the serious consequence of failure in the former case, as compared with the latter; and, hence, the deep consideration required in designing, and the great anxiety felt in executing, a cottage residence, as compared with a mansion or a palace. Those who have had most experience in matters of this kind will be the most deeply impressed with the truth of what is here stated.

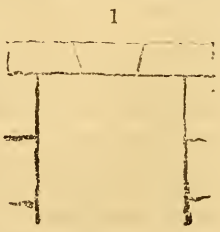
21. *In the earlier stages of civilised society,* the comforts and the elegances of life were necessarily few; but, as civilisation and refinement proceeded, both must naturally have increased. The first house was, doubtless, a mere hovel; and the first garden a piece of dug ground, surrounded by a rude enclosure; and as mankind advanced in knowledge and taste, the hovel and the enclosure were gradually improved, till they became what they are at present. It is the privilege of every existing generation to take advantage of all that is considered excellent in the practices of those which have preceded it. The first architects could have only one manner of architecture to study, and the first gardeners only one mode of laying out their gardens; but the architects of the present day can have recourse to all the different styles of design, and manners of building, which have been prac-

tised by different nations, from the earliest ages of human records to the present time. The modern architect may build a house in the classic or in the Gothic style; or he may adopt the historical and geographical variations of these styles, as exhibited in the Hindoo, Elizabethan, Italian, English, and other manners of building. In like manner, the landscape-gardener, who would lay out grounds at the present day, may adopt either the oldest, or geometrical, style, in which the forms and lines of the house are reflected in the garden in front of it, and which, as it has been recently shown, was practised by the ancient Egyptians more than 3000 years ago; or he may adopt the modern, or irregular, style, in which the forms of nature are brought into immediate contrast with the forms of art: and he may, farther, combine the two styles in such a manner as to join regularity and irregularity in one design. In a word, both in architecture and in gardening, the artist of the present day has it in his power to adopt the style or manner of any former age, or of any other country, and adapt it to the wants of the present age, in the country in which he lives.

22. *There are certain principles common to all the arts of design and taste*, whatever style may be adopted by the architect and landscape-gardener, by which both artists must be guided; and certain others, or rather, perhaps, certain rules, deduced from fundamental principles, which are peculiar to each art. Whatever, either in a building or a garden, cannot be justified on fundamental principles, must undoubtedly be wrong; and whatever cannot be referred to pre-established rules must necessarily be new, and may either be right or wrong, according to its consistency or inconsistency with fundamental principles. Hence it is that all the productions of the fine arts, no less than of the mechanical arts, may be subjected to reason; and, consequently, that when any part is produced, either of a building or of a garden, for which no sufficient reason can be given, that part must be either a superfluity or a deformity.

23. *The fitness of the means employed to the end to be obtained* is the most important principle, applicable both to architecture and gardening as useful arts.

24. *The fitness of a building for the end in view* ought not only to be real, but apparent. A dwelling-house, for example, ought not to be so constructed as to be mistaken for a chapel, or a barn, or a manufactory; nor a chapel, nor any public building, so designed as to be mistaken for a private house. Supports should not only be, but they should appear to be, adequate to the weight to be supported. Hence, when cast-iron pillars are introduced in a brick or stone building, they ought either to be cased or cast hollow, so as to appear of the usual dimensions of brick or stone pillars: or, if the small dimensions required in an iron column are preferable, in order to admit more light, the metallic character of the material ought to be rendered obvious by painting or bronzing, or by some such means; the material of which they are formed ought always to appear obvious at first sight. Stone lintels over openings, when they are not formed of one piece, ought to have the joints of the pieces in such a direction towards a centre as to give them the appearance of being the joints of an arch, as in *fig.* 1., even



though the real source of strength should be an unseen iron plate or beam let into the soffit. Every wall should be broadest at its base; openings, such as windows, should be made above one another; solid parts of a wall above solid parts, rather than above openings; wide openings should be arched; lintels should be of one piece of wood or stone; all the stones forming a wall should have horizontal surfaces on their under and upper sides; and the largest stones of a wall should be nearest the foundation. Much more might be said on the subject of fitness as applied to architecture and building; and the reader will find it treated at length in our *Encyclopædia of Cottage, Farm, and Villa Architecture*, book iv., ch. i.

25. *In gardening*, the principles of fitness, or the adjustment of the means to the end, may be applied to the situation of the garden; to the fitness of its soil for the articles to be cultivated; to the fitness of the forms of the compartments for carrying on the processes of cultivation; to the fitness of the culture for the particular plants cultivated; and so on.

26. *The rules which, in gardening, are derived from this principle of Fitness* are, that in the latitude of Britain, and in the climate of the neighbourhood of London, the best situation for a kitchen-garden or a fruit-garden is on a level plain, open on all sides, and at a distance from hills; that in hilly districts, in the same latitude, the best aspect is on a declivity to the south-east; that the best soil for general purposes is a sandy loam; that the best form of compartments is a square or a parallelogram; and that the best form of culture is in rows, and so forth.

27. *The principles common to architecture and gardening as fine arts.*—In order to render this subject as plain as possible, it may be advisable to commence by endeavouring to point out what a fine art is. A fine art may be said to be a creation, or composition, intended, through the eye or the ear, to please the mind. Its two essential qualities are to create and to please; the work produced must be a creation of the artist, and must be acknowledged as such, otherwise it would be no work of art; and it must excite pleasing emotions, otherwise it would be no fine art, no art of imagination, of beauty, or of taste. If this chain of reasoning be correct, and the conclusion is fairly derived from the premises, the fundamental principles of the fine arts would appear to be two; appearance of art and mental excitability. We shall endeavour to develope these principles a little more in detail.

28. *Appearance of art.*—Any creation, to be recognised as a work of art, must be such as can never be mistaken for a work of nature. It is true that art may create a work which shall be mistaken for nature; but in such a case the object created could afford no pleasure as a work of art, because it would be without the first condition, viz. that kind of aspect by which art is at once recognised. Much is very properly said about the imitation of nature, because no work whatever could produce an effect on the human mind but such as was in accordance with those works from which the human mind receives all its impressions, and to which impressions alone it is accommodated. A work of art, therefore, that is not composed in imitation of, or, in other words, upon the same principles of composition as the works of nature, can no more give pleasure to the human mind, as at present constituted, than an article not fit to be taken into the stomach as food can give nourishment to the human body. The great object of all human exertion, after satisfying those wants which are essential to our existence, is to procure the approbation

or applause of ourselves or others. To imitate nature in such a way as that the object produced should be mistaken for nature, could never excite much approbation for the artist, because its very perfection, by deceiving the spectator into a belief of its reality, would prevent it from being considered as a work of art. On the contrary, when an object is imitated in a totally different material from that in which it appears in nature, and the imitation is successful, the applause of the spectator is great in proportion to the degree of skill displayed.

Thus, suppose a person to succeed in making artificial flowers of coloured paper so like real flowers as to deceive the spectator, and another person to carve an imitation of such flowers in wood or stone, what would be the merit which the common sense of mankind would assign to each of these two persons? The artificial flower-maker would be considered in the light of a manufacturer, or mechanical producer, or repeater of an object, while the carver in wood or stone would be considered as possessing a superior degree of mind, from his having produced the resemblance of a flower in a material so unlike the texture of flowers as wood or stone : he would, in short, be considered an artist.

29. *The principle of the recognition of art* is thus, we think, proved to be founded in human nature: it is recognisable in every description of human improvement; and it is no less essential in the case of the fine arts than in those of common life, or of any of the mechanical arts and manufactures. We have considered it necessary to insist on this principle here, in order that our readers may go along with us when we come to make the application of it to the modern style of landscape-gardening. This style is said to be an imitation of nature; and, in consequence of this expression, many persons have argued in favour of imitating nature so closely as to produce scenes which might be mistaken for natural ones; or, in other words, for those which result from causes operating independently of man. If we are right in our principle, however, such fac-simile imitations of nature, even of the most beautiful nature that can be selected, constitute but a very inferior style of art; and the landscape gardener who should produce a piece of water surrounded by grass and trees, with its margin fringed by bushes and water-plants, and varied by gravel and stones, in such a natural-looking manner that it might be selected for copying from by a landscape-painter, and mistaken by him for a piece of natural scenery, has exactly the same pretensions to the character of an artist as a manufacturer of artificial flowers or wax figures, who should produce a flower of tinted paper, or a dressed figure of a man or boy, so complete a fac-simile of nature that a botanical painter, or a cursory observer, might be desirous of making a drawing from the one, and of speaking to the other, believing both to be alive.

30. *The rules which, in landscape-gardening, may be derived from the principle of the recognition of art* are numerous. With respect to ground, it must either be reduced to levels, or slopes of regular curvatures, as in the ancient style; or, in the modern style, to polished curvatures and undulations, which shall be, either from their beauty of form, or from their clothing of herbage, distinguishable at first sight from the natural surface of the ground by which the work of art, that is, the lawn, park, or pleasure-ground, is surrounded. Wood, if the common trees of the locality are employed, must be either planted in lines, or massed in geometrical figures; but, if foreign trees

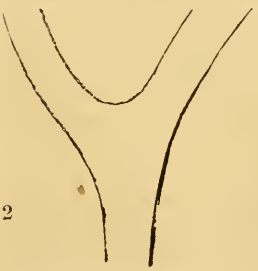
and shrubs only are used, they may be planted in irregular masses or groups, and as single trees. If indigenous trees and shrubs are at any time introduced in the modern style of landscape-gardening, the greatest care must be taken not to crowd, or even group, them together in such a manner as that a stranger might conclude they had grown up there naturally. They must be placed so as to stand distinct from other trees and shrubs, and so as to take forms more perfectly developed than what the same species are found to have in a natural or accidental state in the surrounding country. For example, in a country abounding with the common English oak, no artist, who understands his art, would employ that tree in his artificial plantations, unless at their boundaries, so as to harmonise them with the natural woods of the country; or unless in an avenue, or in some other way in which they could at once be recognised as having been planted. But, supposing that one indigenous oak existed in the midst of his artificial plantation, which he was obliged to retain; or that he were absolutely required to plant one; or that he were desirous of having one to complete a collection; how is that tree, supposed to be common in the neighbourhood, to be treated, so as to subject it to the principle of the recognition of art, and yet so as not to violate its natural form, by clipping it in the ancient manner? To answer this question, it is necessary to consider the state of the common oaks in the neighbourhood: these are, in all probability, either crowded in oak woods, or pruned or otherwise mutilated in hedgerows. Give the oak, in the artificial plantation, therefore, ample room on every side; preserve it from cattle, and let its branches stretch out all around, and hang down upon the ground; and you have at once a tree of art, and of great natural beauty. Water, bounded by the formal lines of the ancient style is easily recognisable as artificial: but how is this end to be attained in a style which professes to be an imitation of nature? There are two kinds of water, in imitations of natural scenery. One is, where there already exists a brook, or a lake, or a river, which is to be appropriated, and rendered a work of art; and the other is, where there is no visible water naturally, but where excavations are to be made. and to be filled with water, which is to assume the character of a lake or river. In the first case, the brook, lake, or river, is readily appropriated as a work of art, by planting exotic, woody, and herbaceous plants along the margins, in a natural-looking manner; carefully removing all that are indigenous, with the exception, perhaps, of such as are not conspicuous, as the usual grasses which compose turf. Thus, the cut-leaved alder might be substituted for the common species; the weeping poplar, or the weeping willow (if not too common in the neighbourhood), and the paper birch, for the common willow and birch; and that truly elegant exotic aquatic tree, the deciduous cypress, might be made the prevailing species.

31. *The application of the principle of the recognition of art to rocky scenery* may, at first sight, appear to present some difficulties. By rocky scenery is here meant scenes of nature in which rocks are predominant features. By what means, for example, are the terrace walk and the perpendicular rocks on the banks of the river Wye, at Piercefield in Monmouthshire, to be rendered a work of art? By substituting another kind of rock for the indigenous one? No; for not only is the scale too large to render this practicable, but, if it were accomplished, the very largeness of the scale would make it to be still considered as the work of nature; unless, indeed, rocks, which every one

knew did not exist in the country at all, were substituted for the natural ones; and even in this case, though the character of art would be maintained, yet the associations connected with solid natural rocks would be so effectually obliterated, that, on the whole, the interest of the scene would be destroyed. Neither in landscape-gardening, nor in any other art, ought every thing to be made to give way to one view of a subject. The most complete mode of appropriating the rocky bank at Piercefield, as a work of art, would be, by the artificial manner of conducting a walk through it, and by the manner in which this walk is constructed. Such a walk should be carried along on a level, or on a regular slope or slopes; and the contrast of such a line, and the rough and ever-varying natural surface, would alone indicate the employment of art. Another mode would be to remove all the indigenous vegetation above and below it, and to supply its place by foreign vegetation of a similar character. Instead of the common oak, which is the prevailing tree at present, substitute the evergreen and the Turkey oaks; and, instead of the common brambles, sloes, and thorns, which protrude from the rocks, substitute the thorns of Greece and America, and the laurustinus, the arbutus, and the cistus of Italy.

32. *In the case of buildings* in the artificial landscapes created by landscape-gardening, art is always recognised in the building itself, that being indisputably an artificial object: but the principle of the recognition of art is not always perceived in the placing of the building: on the contrary, nothing is more common, in arranging the grounds round an edifice, than a violation of this principle. Wherever a building, whether a house, an obelisk, a column, or a statue, is set down among trees and plants, and appears to rise up among them as if it were itself a tree or a plant, there will be found a want of the artificial principle. This want is produced by the vegetation being placed too near the artificial object, and by the trees and ground not having been treated according to art. An artificial object ought, surely, not to appear to grow out of the ground, like a natural one: it ought to grow out according to art,—which indicates that it ought to rise from an artificial basement; and that the ordinary vegetation of the spot ought to be kept at some distance from it. May not creepers be planted against it? Yes; because the planting and training of these indicate design and intention, and enable the spectator to recognise art. We do not say that it is always advisable to plant creepers against a building; because there are a variety of circumstances to be taken into view before any one point can be determined: we merely say that there is nothing in the principle of the recognition of art at variance with the use of creepers, where their use is not at variance with any other principle.

33. *Art is easily recognised in all walks and roads;* but not always artist-like art. The uniformity of the breadth, and the evenness of the surface, of a walk may secure it the character of art, while this character may be counteracted by the footpath-like junction of one walk with another, as in



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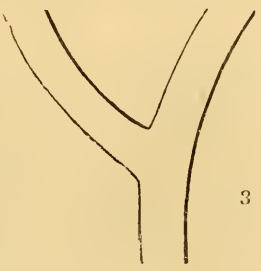

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fig. 2., while the artist-like junction is shown in *fig.* 3. The same remark will apply to the forms of flower-beds on gravel or turf: they are always easily recognised as belonging to art, but not always to high art; that is, the shapes of the beds are not always artist-like. In *fig.* 5., the forms of the beds resemble those of common cordate leaves, thrown down in a natural manner, some in one direction and some in another, as if they had dropped off from a dried specimen in a herbarium. In *fig.* 4., the same leaves are disposed of, as a whole, in an artist-like manner. In *fig.* 6., the shapes, considered separately, are artist-like; but they are thrown down without the slightest regard to symmetry. In *fig.* 7., they are disposed of symmetrically, that is, according to art. Even a straight line, in gardening and in architecture, may be laid out or formed in an unartist-like manner; for example, a line of box, or a brick edging, to a walk, or to a bed or border, which, instead of being perfectly straight, is bent to one side, will be much more offensive to the eye of an artist, than a line perfectly straight in the direction of all its parts, but some parts of which are wanting. It is not that either line could have been formed by nature, but that the evidence of art is more decided in the one case than in the other. The imagination easily supplies the parts which are wanting; but it will not so easily set that part of the line straight which is bent to one side. If, indeed, the line were bent equally to both sides, the absence of rigid art would be less offensive, because the imagination would form a middle line for itself.

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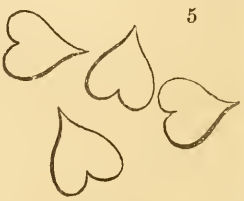
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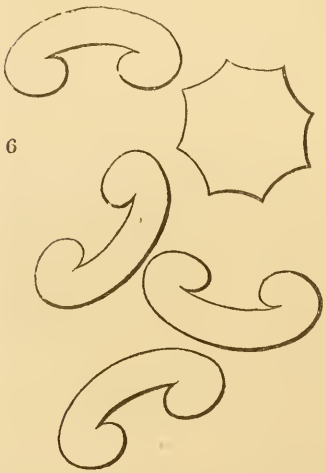
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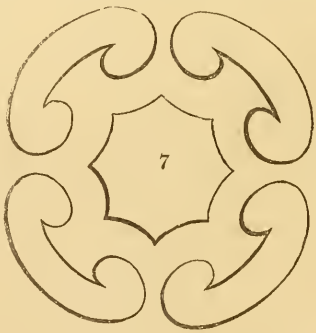
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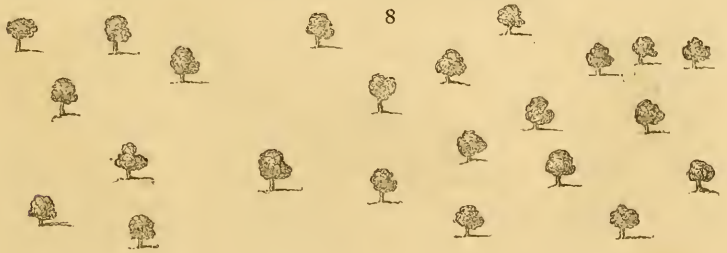
34. *Combination of parts to form a whole.*—The rules, or rather, subordinate principles, derived from the principle of a whole are very numerous, both in architecture and landscape-gardening. In architecture, a building is generally considered as forming a whole of itself, without reference to the scenery

with which it may be surrounded; but, in landscape-gardening, a building is only considered as forming a whole in combination with the scenery by which it is surrounded. Hence, as every whole must be composed of parts, a building in a town, to aspire to that character, cannot be so simple as it may be in the country, amidst verdant scenery. In the town, it ought, with a view to its effect as a whole, to be broken into parts, one of which should prevail in effect over the others, which ought to be subordinate to it, while they co-operated with it in forming a whole. Thus, two pavilions joined together, without a centre or main body, could not form a whole; but, with the main body larger than either pavilion, the whole produced would be acknowledged as such by every eye accustomed to look at objects otherwise than in detail. In the country, the plainest form of a house, a mere cube of masonry, may form a whole, if judiciously surrounded by trees. These trees must, if planted near the house, be either considerably lower than the house is high; or, if the trees are of the same height as the house, there must not be more than one or two of them, or there must be so many as to render the trees the main feature of the whole, and the house only a subordinate feature. Wherever the house is surrounded, or even embraced, on three sides, with a mass of trees of the same height as itself, the view fails to produce the effect of a whole: no one object in the picture has the ascendency; and, if it were not for other counteracting associations, such as that of the wealth and dignity of the proprietor, and the comfort and splendour which are known to exist in and about such dwellings, the bare impression, as a landscape, would be disagreeable. On the other hand, when a house is surrounded, or embraced on three sides by a mass of wood, either a good deal lower than itself, or a good deal higher, a whole is produced, in which the character of architectural dignity prevails in the former case, and of sylvan dignity in the latter. A square house in the country, in an open plain or pasture, unsurrounded by trees, or by other buildings, can never form a whole; because it has no object of any kind to group with it.

35. *A house may form a whole by itself*, without the addition of trees, and so may trees, without the addition of any other objects; but as, in that case, the house must be rendered independent of exterior objects by being broken into parts, so must the wood. In the one case, as in the other, one part must take the lead from one point of view; and all the other parts must obviously belong to it, and yet be subordinate. In the case of a park sprinkled over with trees, if these have been judiciously disposed, they will form a whole with almost every change of the position of the spectator; that is, those near the eye will group together, and form the principal mass; while those which are more distant will form subordinate masses, and unite in supporting the



first. For this purpose, the trees in the park must not be uniformly scattered over the surface, but planted in such a manner as to exhibit connection and grouping, even in the ground plan. In *fig.* 8., the trees are too far apart, and at too uniform distances from one another, to group, or fall into expressive wholes; but in *fig.* 9., they will group agreeably with every change of the spectator.

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36. *The expression,* "*a group of objects,*" merely implies that these objects form a whole. Nearly the same remarks will apply to a lawn varied by flower-beds, or by beds of low shrubs. The beds, if distributed uniformly over the lawn, will never group so as to satisfy the eye of a spectator who is either walking in it, or on a gravel walk round it. The defect will be rendered obvious by comparing *fig.* 10. with *fig.* 11. The shapes of the former

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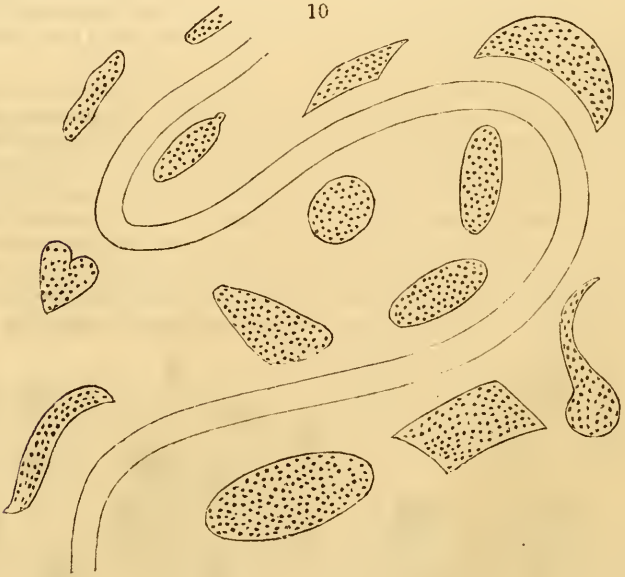
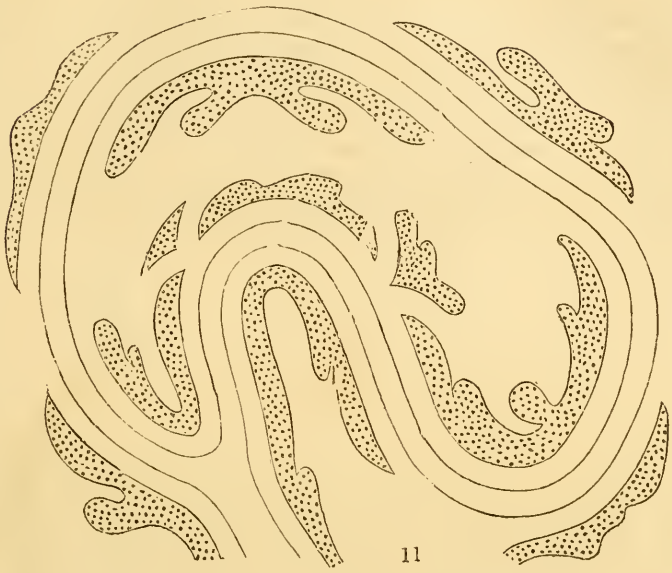


are unartist-like, as well as too uniformly distributed over the surface; those of the latter are artist-like, and group or unite both with the turns of the walk, and with their reciprocal shapes.



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37. *Trees in a park may form a whole* relatively to one another, and yet not relatively to the surface of the ground: for example, they may be placed on the levels only, and not on the hills; in which case, the hills will not group with the trees; and, when the height of these hills approaches nearly to that of the trees, the effect, both of the hills and trees, will be in a great measure, counteracted. On the other hand, by planting trees on the heights as well as on the plains, the views would present groups as effective as if the whole park had been a plain; and, if the hills were chiefly planted, their effect would be much more striking than anything that a plain could possibly produce. Even the magnitude which trees are calculated ultimately to attain, relatively to the extent of the surface on which they are to be planted, should be taken into consideration, no less than their magnitude relatively to that of the buildings which are near them. Thus, a small park would be injured in effect if planted with the highest and most bulky trees, because they would not form a whole with any object in it; and, though they might group together, and form a whole among themselves, yet that whole would be utterly disproportionate to every thing else in the park. On the same principle, the apparent magnitude of water, relatively to the size of the park in which it is placed, may be diminished or increased according to the size of the trees planted near it. Perhaps one of the practices most adverse to the formation of a whole in planting trees is, to plant one part with very large trees, and another part, seen in the same view, and at the same distance from the eye,

with small ones. Hence, groups of aged trees among groups of shrubs do not unite so as to form a whole, without the introduction of trees of an intermediate size. In planting trees, even the kind of tree requires to be noticed, with reference to the production of a whole. An equal number of spiry-topped trees with round-headed ones in a group will not form a whole, from the incongruity of their forms; while a number of round-headed trees of the same bulk, and equidistant from the eye, will not form a whole, from the sameness of their forms and magnitude. Even in sloping and smoothing the surface of ground, the principle of a whole must constantly be kept in view; for, if all the curves and the slopes are of the same curvature and inclination, and of the same magnitude, they will not group; because there will not be a central or leading feature. There must be a prevailing slope; one which takes the lead, either from its magnitude, or its position relatively to the others. Suppose *figs.* 12. and 13., to represent the sections of ground sloping from the front

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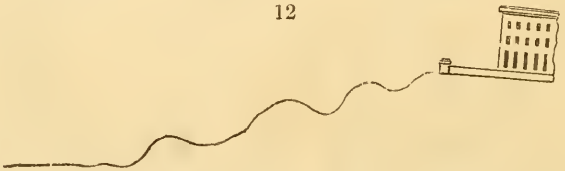

of a house, it will not be denied that there is more of effect in *fig.* 13. than in *fig.* 12.; and the reason is, that there is a feature in *fig.* 13., produced by the large slope which occupies the place of the two smaller undulations in *fig.* 12.

38. *In laying out and planting grounds, it is not only necessary to consider how trees may form a whole with buildings*, with themselves, with shrubs, with ground, with water, with rocks, and even with fleeting objects, such as animals; but how they may form a whole with the objects at different seasons of the year. Thus, one part of the place must not be entirely planted with

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evergreens, and a corresponding part, which is seen at the same time, planted with deciduous trees. In looking down from the windows of a house, whether on an extensive park, or on a lawn of a few acres, it would be unsatisfactory, during winter, to see the principal masses of plantation, on the one hand, all, or even chiefly, evergreens, and, on the other, all, or chiefly, deciduous trees. It would also be unsatisfactory to see evergreens equally mixed together throughout the view, instead of being so distributed, and yet so connected, as, at a distance, to unite in forming one grand whole.

39. *Regularity and symmetry.*—In the modern, or irregular, style of landscape-gardening, as well as in the irregular style of architecture, which, whether under the name of Gothic or Italian, is the style of country houses

now most prevalent, the production of a whole requires a much greater knowledge of art than in the ancient style, either of landscape gardening, or of Greek or Roman domestic architecture: in both of these styles an attempt was seldom made to produce a whole, except by means of regularity and symmetry. It is almost unnecessary to state, that, in the ancient style, whether in ground, in wood, in water, or in buildings of every description, and in roads, regularity or symmetry were the governing principles. The place, as a whole, was generally symmetrical, one half reflecting the other; and the details were always regular. In an age when the beauties of irregularity, and the variety produced by wild scenery, prevailed throughout the country, those of regularity and symmetry would be found to be characteristic of art and civilisation; and they were preferred by our ancestors, with a taste as just and correct relatively to them, and to the circumstances in which they were placed, as our widely differing taste is to us, and our circumstances.

40. *Though symmetry may appear to be a beauty exclusively employed in architecture,* and in the ancient style of laying out grounds, yet this only applies to symmetry when it is joined with regularity. In every irregular whole, that is satisfactory to the eye, there will always be found a certain balance or proportion, which one side of the centre of the picture bears to the other, and which balance is nothing more than symmetry. It will be recollected, that the essential principle of symmetry is the union of two parts as a whole, which do not form wholes separately; in opposition to uniformity, where, the parts being regular, each taken separately forms a whole. Now, in every pleasing landscape it will be found, that, if it were bisected perpendicularly by an imaginary line, something like an equal body of scenery would be found on each side. The same may be said with reference to any irregular building which is pleasing as a picture, and also to any irregular flower-garden, or the planting of an irregular park. A pleasure-ground, which, viewed from the drawing-room windows, appeared to have all the shrubs on one side, and only flowers and lawn on the other, would not be so satisfactory as one where they were more equally balanced. Neither would the views from the house, over a lawn the surface of which formed a hill on one side and a hollow on the other, be agreeable. Hence, a view across a slope, as in *fig.* 14., is never so satisfactory as one either up or down the declivity; but a view across two slopes intersecting each other, as in *fig.* 15., is satisfactory; because in this last case, the one balances the other. Single objects, that are not regular, such as a tree, are never satisfactory, unless they are symmetrical; that is, unless the quantity of branches on one side appears to balance the quantity on the other. Thus, those trees which, being the most irregular by nature, are symmetrical at the same time, are more pleasing than those which are comparatively regular and symmetrical; because they show a greater amount of variety, combined with symmetry. In this point of view, an oak, an elm, and a sweet chestnut are more pleasing trees, and higher in the scale of beauty, than a silver fir, a spruce fir, or a larch. The same observation will apply to shrubs, and even to herbaceous plants. One of the most interesting results of symmetry, as applied to trees, is, where the trunk is thrown, by

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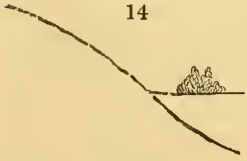

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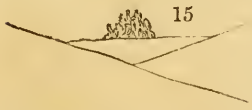

nature or accident, into a position where it requires extraordinary forms of growth in its branches to adjust them to the natural symmetry belonging to its species: for example, when a tree, planted on the banks of a river or lake, has its trunk inclined over the water, and its head in an erect position, and balanced by branches on each side, in the usual manner.

41. *Variety* is the next beauty common to architecture and to landscape-gardening; and it must be acknowledged to be a great addition to symmetry, or to any whole in which there is a complete unity of expression, whether that whole be irregular or symmetrical. In architecture, variety is produced in symmetrical and regular buildings, by a difference in the details; and, in irregular buildings, by a difference even in the smaller parts of the composition, as well as in the details. In regular and symmetrical buildings, variety is chiefly confined to what may be considered the ornamental parts of the edifice; such as architraves, mouldings, cornices, &c. The component parts which are essential to the symmetry, or the regularity, of the whole must remain the same; whereas, in irregular buildings, not only may there be a variety in the mouldings and ornaments, but in the component parts; such as projections, recesses, towers, &c.

42. *In the ancient style of landscape-gardening*, variety was very seldom attempted, except in flower-gardens; because, as we have already observed, it was a beauty so common in the surrounding scenery, as not to be in demand. The reverse is the case in the modern style of laying out grounds; for, the country being now under regular cultivation, in right-lined enclosures, variety is, in a great measure, banished from general scenery; and, hence, it is sought for as a rarity in artificial scenery, in the same manner as uniformity was in ancient times.

43. *In planting*, variety is produced in several ways: by varying the dispositions and distances of trees of the same kind relatively to one another; by varying the disposition and the distances of trees of the same kind with shrubs principally of one kind; and by the use of trees and shrubs of many different kinds. The latter is the most difficult; as, to produce a proper effect, some knowledge of botany and of plant culture is required, as well as a knowledge of art. The reason is, that this variety of trees and shrubs is known to comparatively few; and, many of them having been but a few years in the country, it is only in consequence of botanical knowledge, and a knowledge of the art of cultivation, that an estimate can be formed of what, in point of bulk and character, they will afterwards arrive at. Hence, an artist may have a knowledge of architecture and of the principles of picturesque beauty, in the general disposition of landscape scenery, without being at all adequate to produce the higher beauties of which landscape-gardening is susceptible; and hence, also, it will almost always be more easy to form a perfect landscape-gardener out of a gardener and botanist, than out of a landscape-painter or an architect. The cause is, the science of botany; and that practical application of it which constitutes a knowledge of plants and their culture, consisting of numerous details, and requiring considerable time, are best attained in youth.

44. *In the disposition of a great number of sorts of trees and shrubs in a plantation*, some principle of order must be adopted. If the sorts are mixed together indiscriminately, the result is left to chance; if they are mixed together as equally as possible, then the result must necessarily be monotony, by the same number of kinds appearing in every part of the plantation; and, if

each kind is kept in a group or mass by itself, there will be a risk of want of connexion, and, consequently, of unity in the general result. In what way are all these difficulties to be overcome? Chiefly, we should say, by keeping each sort by itself, and placing all those sorts nearest each other which are most alike; avoiding all formality in the outlines of the spaces allotted to each sort; and allowing these spaces to indent or ramify into one another. For this purpose, a knowledge of the natural system of botany is of the greatest use to the landscape-gardener; since it teaches him that all those trees and shrubs that belong to the same natural family, order, or tribe, admit of being brought together in the same group. The chief difficulty, therefore, will be in joining and connecting the groups together; and here a general rule may be given. This is, that, when the groups have a near general resemblance to each other, such as those of the oaks with the elms, or *C*ratæ̀gus with *P*yrus, then the union may be comparatively abrupt; that is, with a slight intermixture of the trees of both groups at the points where they join. But when the groups are very dissimilar, such as when the pine and fir tribe adjoin deciduous trees, the union must be very gradual, by means of numerous indentations and ramifications of the one group into the other. For example, suppose it were desirable to join a large mass of different species of oak (*fig.* 16. *a*) with a large mass of different species of pine (*b*); then, adjoining some of the

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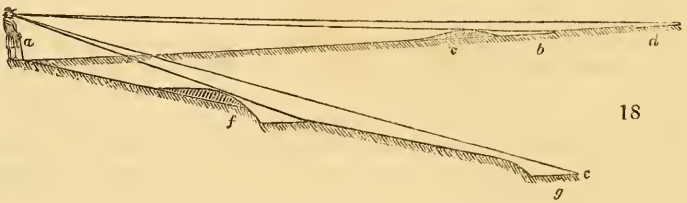
evergreen oaks in the one group (*a*), place one or two pines, which grow in large and compact forms; and against some of the half-evergreen oaks, such as the Fulham or old Lucombe oak, place one or two pines of comparatively slender growth. In like manner, in the opposite group, evergreen and half-evergreen oaks may be planted among the pines, as at *c*, so as to form the extreme points of the oak group in that direction; and, as the one group approaches the other, not only evergreens and half-evergreens, but deciduous species, in equal numbers, may be introduced. In all this, care must be taken to avoid a regular progression, and everything like formality. By such means a degree of union is at first indicated, and afterwards gradually increased, till, at a point equidistant between both groups, the number of plants belonging to each group will be equal. In this way, trees of the most opposite kinds may be introduced in the same plantation, even adjoining each other; but, where the plantation is of any extent, and many kinds are to be introduced, the introduction of opposite kinds adjoining each other can never be required. It can never, for example, in such a plantation, be requisite to unite the weeping willow with the Scotch pine; nor the poplars with the larch or the weeping birch; nor very large-growing trees, such as the elms, with trees of small size, such as the pyrus or the cratægus; nor trees with pinnated leaves, such

as the ash and the Robinia, with such as have narrow, grass-like, or needle-like leaves, such as the deciduous cypress, and pines, and firs. We repeat, that, for assembling trees and shrubs in a harmonious manner with reference to general appearance, excellent hints are afforded by the natural system of botany; and that the artist who has a general knowledge of this system, and understands, at the same time, the principles of composition as applied to lines and forms, which we have been endeavouring to lay down, can never be at a loss how to proceed.

45. *Variety in the views obtained from the house, and from the different walks conducted through the grounds*, is one of the grand desiderata in every place laid out in the modern style, whether its extent may be large or small. With respect to the views from the house, the first thing to be attended to is, the disposition of the rooms, so that their windows may look in different directions. Unless this has been studied by the architect, it will be impossible, even in the finest situation, to produce much variety in the views. Suppose a house placed on a slope, commanding an extensive prospect: if all the rooms looked towards that prospect, all of them would have good views, but these views would not be varied; whereas if, from one side of the house, the windows of one room (say the drawing-room) looked out on a level flower-garden; and if, on another side, those of the dining-room looked up the slope; while, on a third side, those of the library, or breakfast-room, commanded the distant prospect; there would be three distinct characters of view. Now, in very small places (say of a quarter of an acre, or even less, in extent), this varied disposition of the rooms, or, rather, of the manner of lighting them, ought never to be lost sight of; because, altogether independently of distance, or of any object beyond the boundary fence, the views may be rendered of different characters by the different kinds of trees and shrubs planted; by their different disposition; by a difference of form in the ground, and by a difference in the architectural ornaments, or by the absence of architectural ornaments altogether. Even a difference in the form and size of the window, or the absence or presence of a balcony or veranda, will altogether alter the character of the scenery. Wherever, therefore, a house stands isolated, and has a clear space of a few yards on each side of it, it may always have at least four different characters of view, independently of the effect produced by balconies, verandas, or other changes in the windows or foreground. Hence, also, in limited plots of ground, whatever is their shape, greater variety of view will be produced by placing the house nearer one end, or nearer one side, than in the centre. In the latter case, it is impossible to get depth of view from any side, and thus a great source of beauty is lost. A deep view includes a greater number of objects, and, consequently, admits of a greater variety of effect of light and shade; it increases our ideas of extent, and, by concealing more from the eye than can be done in a confined view, it gives a greater exercise to the imagination. Add to this, that, in a small place, depth of view is not expected; and, consequently, when it does occur, its effect is the more striking by the surprise it occasions, as well as by its contrast with the other views, which must necessarily be very limited. In *fig.* 17., *a* is the house, placed at one side of a plot; *b*, the drawing-room, having a view the whole length of the garden: *c* is the dining-room, having a very confined view, and, in short, looking across some bushes, to a screen of evergreens (say hollies or evergreen oaks); *d* is the breakfast-

room, or common sitting-room of the family, looking on a flower-garden, to which there is a descent from a balcony by three steps. The other small room may be used as a business, waiting, or gentleman's room; and the situation of the staircase is indicated. The central hall is large for the size of the house, and may, in summer, be used occasionally as a music-room, or as a play-place, or dancing-room, for children. All the offices are on the basement story, and the first and second floors are bed-rooms. If the garden were larger, or even of its present size, if circumstances were favourable, a small piece of water, supplied from a dripping rock, at *e*, would have a good effect; and there might be a statue on a pedestal, surrounded with tazza vases of flowers, in the centre of the flower-garden; or, if water were abundant, a fountain might be substituted for the statue. The rest of the garden, with the exception of the surrounding border between the walk and the boundary wall, is entirely of turf, varied by choice ornamental trees and shrubs, including some fruit-trees and fruit shrubs. The standard roses, and the fruit shrubs, such as gooseberries, currants, raspberries, &c., of which there cannot be more than two or three plants of each kind, stand in small circles, kept dug and manured, in order that they may produce their flowers and fruit of good size; but the mulberry, the quince, the medlar, and the few apples, pears, plums, &c., for which space can be afforded, may stand on the grass. Against the walls are planted one or two peaches, nectarines, and apricots; and against the house, a fig-tree and a vine. The remainder of the walls, and of the house, may be varied by roses and flowering creepers; except the more shady parts of the surrounding wall, which may be covered with the common, the giant, and the variegated ivy. The surrounding border, between the walk and the boundary-wall, is wholly devoted to bulbs in spring and the beginning of summer; with a row of Russian violets inside the box, for producing fragrance in winter; and patches of mignonette at regular distances, to scent the air during summer. Among the groups of trees, and close by their roots, common cowslips, snowdrops, wild violets, and wood anemones may be planted to come up among the grass; and, being only planted in a few places, and these near the roots of the trees, they may be easily avoided by the mower. In such a garden as this, small though it be, a very great variety of trees and shrubs might be grown; and the flower-garden is sufficiently large to produce a very good display of the finer kinds of hardy flowers.

46. *Where walks have been judiciously laid out, and the grounds on each side of them planted with the proper degree of skill, the views from them will continually vary,* even in grounds of limited extent, and without any distant prospect. This result, however, is not to be obtained otherwise than by a very carefully-studied plan for disposing of the walks and the trees. It can neither be attained, even in a tolerable degree, by a gardener who knows nothing of the principles of composition, nor by an architect or landscape-gardener who is not well acquainted with the forms, sizes, modes of growth, times of flowering, &c., of trees and shrubs. In proceeding to lay out a small place, with the view of making the most of it in this manner, the first thing is to ascertain what extent of walk may be produced without ever showing any portion of the walk to the pedestrian, except that which is immediately before him. This is evidently more difficult to accomplish in a small place, with a level surface, than in one where it is sloping or undulating; but, by creating artificial undulations, even on a very small scale, much may be accomplished in a very little space; and the effect of such undulations can always be determined beforehand. Thus in *fig.* 18., a spectator at *a*, 63 ft. from a walk at *b*,



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would see the gravel of that walk, unless the view of it were intercepted by a small flower-bed, or gentle rise in the turf, 18 in. high, such as *c;* whereas, by removing the walk to *d*, the mere distance would conceal it. This is supposing the general surface of the ground to be a perfect level; but if it were to slope from the house in the degree indicated by the line *a e*, then the walk would be concealed by a raised bed at *f*, at little more than half the distance from the eye; and by extreme distance at *g*.

47. *Another means of concealing walks* is by chains or continuous groups of low shrubs; but these, when not carefully introduced, are, in very small places, apt to injure the view, by interrupting the continuity of the surface of lawn, and by producing too many parts for so small a picture. These groups of shrubs may, however, be resorted to for purposes of concealment, at a great distance from the eye at the sides of a view, or at its farther extremity. In some cases walks may be concealed, or prevented from obtruding themselves on the eye, by forming the more conspicuous parts of them of blocks of earth-coloured stone, which will not have so glaring an effect as bright-coloured gravel. Walks laid with blocks of wood, or with grey bricks, have also a subdued tone of colour, and are not offensive to the eye; but of course they can only be adopted on a small scale, or in particular parts of a design, on account of the expense.

48. *The walks about a place may be increased and varied by occasionally crossing each other, either in grotto-like tunnels under ground, or by disguised bridges above the surface.* This is a source not only of great variety in the

character of the views, but a means of procuring views of a very striking description. In forming short tunnels in pleasure-grounds, the greatest care must be taken to have them straight in direction, so that, on entering at one end, the light may be seen at that opposite; and never to construct them in a circuitous direction, because, in that case, they are necessarily dark, in consequence of the light not entering the tunnel directly. This kind of circuitous tunnel is also objectionable, because it might raise in some minds an idea of the tricks of grotto-work, which were thought so much of in the ornamental gardening of the seventeenth century, but which are now justly considered as puerile conceits. The kind of tunnel that we allude to as desirable in small gardens is, in point of use, nothing more than a bridge carried over a walk instead of over water; and with the architecture so disguised by vegetation as not to be obtrusive, or to interrupt the idea of the continuation of the walk. It is almost needless to observe that perfect dryness, both in the walk and in the masonry, is essential to bridges or tunnels of this kind; and this can readily be obtained by covering the arch, after it is built, with a layer of clay. The effect of even one tunnel of this kind in a limited space, in adding to the length of walk, and in giving variety to the scenery, may be seen in the public terrace-garden at Gravesend. Open and covered seats are also sources of variety in the views of artificial scenery, both as foregrounds to look from, and as objects to look at. In small places, however, they require to be introduced with the greatest caution, and never as conspicuous features; because more than one, for the sake of being able to read or work in the open air in fine weather, can seldom be requisite. In large places, on the other hand, seats in different situations are not only useful as affording resting-places, but as indicating particular points of view, which might otherwise pass unnoticed by a stranger.

49. *Architectural ornaments, such as vases, statues, &c.*, water in different forms, pieces of rockwork, and other objects of the like kind, independently altogether of trees, shrubs, and plants, and of the view of objects beyond the boundary fence, form sources for varying the views from the walks of a small place. Statues, vases, and other architectural ornaments, ought to be very sparingly introduced at a distance from the house, in gardens in any style; but more especially in such as are laid out in the irregular or modern manner. Mixed up with groups of flowers and shrubs, they divide the attention between the beauties of art and the beauties of nature; and, as the mind can only attend to one sensation, and experience one emotion of pleasure, at a time, it becomes distracted among so many. The true situation for statues is on an architectural terrace, or in an architectural flower-garden adjoining the house, the conservatory, or some other architectural structure, where architecture and sculpture are the main features, and flowers and vegetation are altogether subordinate.

50. *Combination of objects.*—When the artist has brought together in his imagination all the different artificial sources of variety that his subject is capable of receiving, his next business is to arrange these according to some kind of order. He will not think of having all his shady walks at one place, and all his open walks at another; neither will he distribute shade and sunshine equally over the whole scene. He will contrive to have at least one shady walk for midsummer, and one perfectly open to the sun, for midwinter; and he will dispose of the shady parts of the walks so as generally to form

separations between striking scenes, that the one may be forgotten before the other is entered on; and that, by means of shade near the eye, the objects at a distance on which light is thrown may appear the farther off. In studying the succession of views, the artist will operate on the principle of contrast so far as to make them different; and on the principle of union, so as not to render them inconsistent with each other. The principle of contrast will direct that the same description of ornaments should not be distributed over the whole place; and that neither flowers nor trees and shrubs should prevail everywhere, any more than that the same kind of tree and shrub should. The same turf and the same description of gravel may prevail throughout a whole place, as fundamental principles of union, as the same sky and clouds appear in the atmosphere; but every thing else should be varied, by passing from one character of scene into another, till we have made the circuit of the entire garden: by which is meant not merely walking round it, which may suffice in small places, where the means are limited; but walking round it twice, the second time being in a contrary direction to the first. This is to be effected by the mode before mentioned, of making one walk cross over another, so that the spectator shall not be aware of being carried twice over the same ground. In places of the very smallest kind, even of a few perches in extent, there are always two characters of view, one looking towards the house, and one looking from it. Hence, in a larger place, there must be a series of views of the one character, and another series of the other; and, consequently, to see all the beauties of such a place, a stranger would be required to walk twice over the same ground; that is, after he had been once over it, to turn round and retrace his steps; but, by the system of bridging and tunneling, the eye of the spectator is carried twice over the same ground without his knowing it, and without his passing twice over the same walks; and thus he can hardly fail of giving the place credit for a greater extent than it really possesses.

51. *Variety may be added to small places laid out in straight lines*, by breaking these lines; and this may be done in many different ways. The straight lines of the coping of a wall may be broken by clusters of ivy; by allowing some of the trees or flowering climbers, planted against the wall, to grow above it in some places; or by allowing plants to grow out of crevices in it. The lines of walls may be broken, by allowing the branches of adjoining shrubs to extend over them in some places, and in others to produce masses of shade and concealment. Even flower-beds and compartments enclosed by box edgings, which, when newly formed, are perfectly regular or symmetrical, may have the additional beauty of variety conferred on them in a similar manner. All objects distant from the eye, in a formal garden, may be varied by placing trees in the foreground; and the more slender these trees are, the greater the number that may be planted. Variety may be introduced, even on flat surfaces, by the addition of ivy, and allowing it to trail along the ground, or by planting evergreen herbaceous plants; care being taken that the masses so produced shall always be connected with something else with which they may form a whole. Rockwork, whether natural or artificial, derives a great part of its beauty from the variety produced by a partial clothing of vegetation; and even houses and naked walls may be rendered interesting by the shade and variety, produced by trees or other plants trained against them, altogether independently of the botanical interest which these plants

will create. Water depends for its variety on the vegetation placed along its margin, as much as a naked wall depends on the trees or plants trained against it. Water is also varied by its general outline, and by islands, and projections and recesses; all of which may themselves, in their turn, be varied by vegetation. Trees and shrubs, which confer so much variety on other objects, may even have their own variety increased by pruning. Heavy compact forms, and orbiculate lumpish shapes, may be broken and lightened by the judicious removal of branches, so as to admit light and air; and to show, in part, the trunk, and the ramifications of the tree.

52. *Harmony* in landscape-gardening may be produced by the introduction of architectural terraces, statues, vases, and other sculptural objects, so as to connect the house in some measure with the grounds.

53. *Style and character.*—A house, or the scenery of a country residence, may be pleasing from its regularity, its symmetry, its variety, and the harmonious effect of the whole, and yet have nothing in it to distinguish it from other agreeable places of the same extent; that is, it may be without exhibiting any particular style of design or expression of character. Thus, a house may have an agreeable general form, and windows so ample as to indicate large and lofty apartments within; it may be placed on an architectural basement; and it may be terminated by architectural chimney tops; and yet neither be decidedly Roman, decidedly Italian, nor decidedly Gothic nor Elizabethan. A house may also have a particular character given to it by some feature more or less striking; such as a veranda, a far projecting portico, a terminating cupola, &c.; or it may be enriched so as to be expressive of some degree of character, by sculptures, statues, or vases, &c.; or it may assume the character of a cottage, of a castle, or of an ecclesiastical building. It is not difficult to give character to landscape scenery, when there exists naturally considerable irregularity of surface; but on level surfaces, where character is to be given chiefly by trees and buildings, more skill is required. In such a case, the first consideration is, to produce something that shall powerfully contrast with adjoining residences, similarly circumstanced with reference to natural features and trees. If, for example, the trees in the adjoining residences are chiefly deciduous, those in the residence which is to be rendered expressive of character may be chiefly evergreens; and among these evergreens some striking kinds ought to prevail; such as cedars, silver firs, &c. But a still more immediate expression of character may be produced by employing the geometric style of laying out roads and planting the trees; or by adopting some style of laying out, different from that adopted in the adjoining residences.

54. *There are two principal styles* of laying out grounds in Great Britain; viz. the geometric, and the natural. The latter is what, on the continent, is emphatically called English gardening; to which epithet a vague general idea is attached, of grounds and plantations formed in flowing lines, in imitation of nature; as contradistinguished from ground formed into regular slopes and levels, or plantations in straight lines, or included in plots, bounded by lines always decidedly artificial, and it may be divided into three kinds: the picturesque, the gardenesque, and the rustic. By picturesque gardening is to be understood the production, in country residences, of that kind of scenery which, from its strongly-marked features, is considered as particularly suitable for being represented by painting; while by the gardenesque style is to

be understood the production of that kind of scenery which is best calculated to display the individual beauty of trees, shrubs, and plants in a state of culture; the smoothness and greenness of lawns; and the smooth surfaces, curved directions, dryness, and firmness of gravel walks: in short, the gardenesque style is calculated for displaying the art of the gardener; while the picturesque style has a constant reference to what would look well in a picture; and the rustic style to what is commonly found accompanying the rudest description of labourers' cottages in the country. The object of this last-mentioned style, or rather manner, is also to produce such fac-simile imitations of common nature, as to deceive the spectator into an idea that they are real or fortuitous. It thus appears that there are several distinct styles in which grounds may be laid out, without any reference to the natural character of the surface, the kinds of trees planted, or the architectural or other objects introduced. We shall briefly notice the leading features of each of these styles.

55. *The geometrical style of landscape gardening*, or, as it is frequently called, the ancient, or architectural style, is evidently taken from the architectural lines of houses and fortifications; and it was accordingly, when it was the sole style in use throughout Europe, considered to be as much the province of the architect as the house itself. The antiquity of this style is evidently as great as that of house-building, with the progress of which it must have kept pace in every country. As the first beauties attempted in house-building would be those of regularity in the walls and roof, and in placing the doors and windows; so, in gardening, the fences, the surface of the ground, and the roads or walks, would be made regular. The next step in the progress of both arts would be rendering the house, and also the garden, symmetrical; one half of the elevation of the former, and of the ground plan of the latter, reflecting the other. In general, the house was approached directly in front, by a straight avenue, bordered on each side by one or more rows of trees; and whatever plantations or enclosures were made on one side of this avenue, were repeated on the other side. Immediately round the house, and commonly enclosed by a half-sunk wall (the excavation or ditch for which frequently formed a canal, or moat, filled with water), was the garden, in which were cultivated not only flowers and fruits, but, for a long period, even the culinary vegetables. Numerous improvements and variations were made in this mode of arranging grounds in the architectural style; but the characteristic of all these variations, and that which at once distinguished them from surrounding nature, was, the prevalence of geometrical lines as the boundaries of forms, and of regularity in the distance of objects from one another. The lines might be straight or curved, or combinations of straight and curved lines; but they never deviated into lines which might have been supposed to be the work of chance. Trees, whether in hedgerows, avenues, or masses, were always planted at regular distances; and never, in any case, so as to leave any room for mistaking them for trees which had belonged to some natural wood or forest. The reason of all this is sufficiently obvious. The whole country abounding in natural and irregular forms, there would have been no credit for either wealth, skill, or taste, obtained by imitating these: while, by employing artificial forms which are nowhere to be found in nature, a mark of distinction was at once obtained, which conveyed the idea of wealth, skill, and taste; and which thus answered every purpose of the possessors.

56. *The natural, or English, style.*—As the lands devoted to agriculture in England were, sooner than in any other country in Europe, generally enclosed with hedges and hedgerow trees; so the face of the country in England, sooner than in any other part of Europe, produced an appearance which bore a close resemblance to country seats laid out in the geometrical style : and, for this reason, an attempt to imitate the irregularity of nature, in laying out pleasure-grounds, was made in England, with some trifling exceptions, sooner than in any other part of the world ; and hence the style became generally known as English gardening. The English, or natural style of gardening, was first called landscape-gardening by Shenstone ; it was also called natural gardening by Bosc, Chinese gardening by Sir W. Chambers, and picturesque gardening by Gabriel Thouin ; though none of these authors, unless we except Chambers, attempted to give a correct definition of what they meant by the terms they used. The words landscape-gardening are evidently applicable to the geometrical style, as well as to the natural style; because landscapes are produced by both : but these landscapes differ in being, in the former case, a geometrical disposition of walks and beds, and, in the latter, an imitation by the hand of man, of natural scenery.

57. *Artistic imitation of natural scenery.*—The imitation of natural scenery by the hand of man may be rendered artistic in three different ways. First, we may employ the same sorts of shrubs and trees which are common in the surrounding country ; but, in this case, we must arrange them differently. Thus, if the whole country be covered with wood, treated as coppice-wood, the artistical scenery may consist wholly of groups of full-grown trees, surrounded by, and interspersed with, smooth turf; or, on the other hand, if the surrounding woody scenery be composed wholly of masses of full-grown timber-trees, such as thick close-growing pine groves, we may employ the same kind of trees sparingly, on an extensive breadth of smooth turf, as before. There are various other modes in which a difference might be made between the object produced and the object imitated ; but these will suffice to give an idea of this first or lowest degree of artistical imitation, which may be called the imitation of indigenous landscape. The second kind of imitation consists in employing trees and shrubs of kinds totally different from those of the surrounding country ; and which, whatever may be the mode of their arrangement, will, at first sight, distinguish the landscapes of which they form a part from those of the given locality or country. Thus, in Britain, the trees and shrubs of North America, the Continent of Europe, and the temperate parts of Asia, afford ample resources to the landscape-gardener. Now, the trees employed in this imitation of nature may be disposed in two ways, which we have already designated as the picturesque and the gardenesque ; the first being the imitation of nature in a wild state, such as the painter delights to copy ; and the second, the imitation of nature, subjected to a certain degree of cultivation or improvement, suitable to the wants and wishes of man.

58. *Picturesque imitation.*—To design and execute a scene in either of these styles of imitative art, the artist would require to have, to a certain extent, the eye of a landscape-painter ; the science of an architect and of a botanist ; and the knowledge of a horticulturist. Every part of nature, whether rude or refined, may be imitated according to art. For example, an old gravel-pit, which had become covered with bushes and indigenous trees, and contained a

hovel or rude cottage in the bottom, with a natural path worn in the grass by the occupants, would be improved according to imitative art, if foreign trees, shrubs, and plants, even to the grasses, were introduced instead of indigenous ones; and a Swiss cottage, or an architectural cottage of any kind that would not be recognised as the common cottage of the country, substituted for the hovel. To complete the character of art, the walk should be formed, and gravelled, at least, to such an extent as to prevent its being mistaken for a natural path. Rocky scenery, aquatic scenery, dale or dingle scenery, forest scenery, copse scenery, and open glade scenery, may all be imitated on the same principle; viz. that of substituting foreign for indigenous vegetation, and laying out artificial walks. This is sufficient to constitute a picturesque imitation of natural scenery.

59. *Gardenesque imitation.*—Where the gardenesque style of imitating nature is to be employed, the trees, shrubs, and herbaceous plants must be separated; and, instead of being grouped together as in forest scenery (where two trees, or a tree and a shrub, often appear to spring from the same root, and this root is accompanied by large rampant herbs), every gardenesque group must consist of trees which do not touch each other, and which only become groups by being as near together as is practicable without touching, and by being apart from larger masses, or from single trees or rows of trees. It is not meant by this, that in the gardenesque style the trees composing a group should all be equally distant from one another; for in that case they would not form a whole, which the word group always implies. On the contrary, though all the trees in a gardenesque group ought to be so far separated from each other as not to touch, yet the degrees of separation may be as different as the designer chooses, provided the idea of a group is not lost sight of. In *fig.* 19. the trees are arranged in the gardenesque manner; and

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in *fig.* 20., in the picturesque style. The same character is also communicated to the walks; that in the gardenesque style having the margins definite and smooth, while the picturesque walk has the edge indefinite and rough. Utility requires that the gravel, in both styles of walk, should be smooth, firm, and dry; for it must always be borne in mind, that, as landscape-gardening is an useful as well as an agreeable art, no beauty must ever be allowed to interfere with the former quality.

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60. *In laying out and planting grounds,* or in criticising such as are already formed by eminent artists, it is necessary always to bear in mind the difference between the gardenesque and the picturesque; that is, between a plantation made merely for picturesque effect, and another made for gardenesque effect. Gardenesque effect in plantations is far too little attended to for the beauty of the trees and shrubs, whether individually or collectively; and picturesque effect is not generally understood by gardeners; so that the scenery of suburban residences is often neutralised in character by the ignorance of professional landscape-gardeners of the gardenesque, and of professional horticulturists and nurserymen of the picturesque. To make the most of any place however small, all the styles of art ought to be familiar to the artist; because there are few places in which, though one style prevails, some traits of other styles may not be advantageously introduced. In planting, thinning, and pruning, in order to produce gardenesque effect, the beauty of every individual tree and shrub, as a single object, is to be taken into consideration, as well as the beauty of the mass: while in planting, thinning, and pruning for picturesque effect, the beauty of individual trees and shrubs is of little consequence; because no tree or shrub, in a picturesque plantation or scene, should stand isolated, and each should be considered as merely forming part of a group or mass. In a picturesque imitation of nature, the trees and shrubs, when planted, should be scattered over the ground in the most irregular manner; both in their disposition with reference to their immediate effect as plants, and with reference to their future effect as trees and shrubs. In some places trees should prevail, in others shrubs; in some parts the plantation should be thick, in others it should be thin; two or three trees, or a tree and a shrub, ought often to be planted in one hole, and this more especially on lawns. Where, on the contrary, trees and shrubs are to be scattered in the gardenesque manner, every one should stand singly; as in the geometrical manner they should stand in regular lines, or in some regular figure. In the gardenesque, there may be single trees and single shrubs; but there can be no such thing as a single tree in the picturesque. Every tree, in the picturesque style of laying out grounds, must always be grouped with something else, if it should be merely a shrub, a twiner, or a tuft of grass or other plants at its root. In the gardenesque,

the beauty of the tree consists in its own individual perfections, which are fully developed in consequence of the isolated manner in which it has been grown ; in the picturesque, the beauty of a tree or shrub, as of every other object in the landscape, consists in its fitness to group with other objects. Now, the fitness of one object to group with another evidently does not consist in the perfection of the form of that object, but rather in that imperfection which requires another object to render it complete.

61. *In rustic, indigenous, or fac-simile imitations of natural scenery,* the object, as we have already observed, is to deceive the spectator, and make him believe that the scene produced is of a fortuitous origin ; or produced by the humble exertion of a country labourer. Such scenes differ from those of the geometric style, and also from those of artistical imitation, in this, that the same person who contrives them must also execute them. They can have no merit in design, and only mechanical merit in the execution. They scarcely require the aid of either a professional landscape-gardener, or a professional horticulturist ; but, at the same time, they could not be executed by every common labourer. The imitation of such scenes must be made by a sort of self-taught artist, or a regularly-instructed artist who will condescend to accept of this kind of employment. Those villas in which it might be desirable to produce a fac-simile imitation of fortuitous scenery ought to be situated near a large town, in order that the scene created may contrast the more advantageously with everything around it. In many spots in the neighbourhood of London, and other towns which are built of brick, and where gravel is found for forming the roads, there are often clay pits or gravel pits on the ground which is to be let for building on ; as in other situations there are old chalk pits or stone quarries. Suppose a pit of either kind to be in some part of a piece of ground of an acre or two in extent, which is to be laid out as a country house ; and that it were thought advisable, as an episode to the general scenery of the place, that a fac-simile imitation of nature should be created in this pit.

As a first example, we shall suppose that the pit is a clay pit, and not fit for a human habitation at the bottom. In this case, let the bottom of the pit be covered with turf, smooth in some places, and in others mixed with nettles, thistles, and other weeds, and varied by thorns, briars, brambles, elder bushes, and other trees and shrubs that generally spring up on waste ground. In one or two parts of the bottom of the pit let there be pools of water, with rushes and other aquatic plants, and some alders and willows of the commonest kind for shade. These and other details being executed in the bottom of the pit, surround it on the outside by a thick plantation of one or two kinds of trees and shrubs, such as are generally found in copse-wood ; and let there be a winding straggling path through this copse-wood, of such a length as to obliterate for the moment the impression of the artificial scenery of the other parts of the pleasure-grounds on the mind of the spectator while he is pursuing the winding slightly-marked path among the bushes to the bottom of the pit. If the plantation were surrounded by a hedge or other fence, and the entrance to the path were through a gap in this fence, the deception would be the more complete.

The second example we shall suppose to be a dry gravel pit, and that in the bottom of it a dwelling-place might be formed for a workman and his wife, with a hovel to serve as a cow-shed, in which cows might be kept for

the family, and in which also an ass might be kept for the use of the gardener, in rolling his walks, carting manure and weeds, and for other purposes. Instead of a crooked footpath entering through a gap in a hedge, as in the first example, a rough winding road might be formed, by which it might be supposed that the gravel had been carted out of the pit, but which, owing to the lapse of time, had become principally covered with grass; and this might be entered through an old rickety gate; while in the bottom of the pit there might be the cottage dwelling, and the hovels, which, though comfortable within, ought to appear in a half-ruined state without; and a hayrick rudely fenced round, with a small stack of fagots for fuel, &c. The reader can easily supply the rest.

Both these examples would be fac-simile imitations, which might easily be mistaken for nature itself, or what we call rustic scenery; and, though they might, and doubtless would, afford pleasure in themselves, and as contrasted with the scenery around them, yet that pleasure could in no respect be considered as resulting from them as works of art, unless we were told that they were artificial creations.

62. *Comparative merits of the different styles.*—We have been thus diffuse on the different styles of laying out grounds, in order to show the distinctive character of each; and that each has its peculiar uses and beauties. Since the introduction of the modern or irregular style of laying out grounds, it has been customary to consider that style only as exclusively beautiful; and the geometrical style as unnatural and altogether in bad taste. In consequence of this opinion pervading, we may say, all ranks, and being found in all books that mention gardening as an art of taste, we see constant attempts made to introduce the irregular manner of planting, and serpentine lines, in places where they are altogether unsuitable. For example, it is not uncommon, in the suburbs of London, to find a garden, or a public square, with the boundary fence in a straight line, and parallel to it a serpentine gravel walk. If the reader has understood the remarks in this and the preceding pages, he will feel and comprehend the utter want of harmony which exists between the straight line and the serpentine line, independently of the impossibility of walking with comfort, when, at every five or six steps, the walk makes a turn; and where the turns, for some distance before the eye, may be all seen at once. For such scenes, and for all small gardens, bordered by straight lines, the ancient or geometrical style is unquestionably the best; and as a proof that this is the case, it may be mentioned, that all small gardens are laid out in this style involuntarily, by those who have no preconceived ideas on the subject, doubtless from an innate feeling that it is the most suitable to the boundary fence. Another class of persons, who know just enough of gardening to be aware that there are two styles, and who have been accustomed to hear the ancient style decried by all the authors who have written or even touched on gardening since the time of Horace Walpole, look at the straight walks of their small walled gardens as deformities; and regret that they cannot, for want of room, indulge in that style which alone they have been taught to esteem as beautiful. Such ideas are entirely the result of prejudice in favour of opinions expressed by men considered as authorities, and who, at the time they wrote, were so much captivated by the novelty of the irregular style, that they could not allow themselves to do justice to any other. Hence, they condemned the geometric

or regular manner, without stopping to enquire into its merits, or, in their admiration of the modern style, being able to separate what was merely the effect of novelty, from what was due to its permanent characteristics. If what we have said on this subject has been understood by the reader, he will consider the ancient style as equal in point of merit to the modern one, and possessing quite as much claim to be called natural, and in good taste, as it does. In fact, the geometric style may be said to be the more natural of the two; since the first indications which children and rude nations give of buildings, sculpture, gardening, or any other ornamental or mixed art, are always marked by regularity, or some disposition of the materials which shows the object produced to be the work of man, and not the result of nature.

63. *As general rules* it may safely be laid down, that whenever a piece of ground to be laid out as a garden is small, and bounded by straight lines, the geometrical style is that which ought to be employed; that when the ground is to be laid out as a garden is large, it may be laid out in any style, or partly in the regular, and partly in the irregular styles; and that where the surface of the ground is varied, their regular style is most suitable; while the geometrical style should be preferred when the surface is even or flat. With respect to those modifications of the natural or irregular style which we have described as the picturesque, gardenesque, and rustic, or rural, the first, as it requires least labour in the management, is best adapted for grounds of considerable extent; the second is more suitable for those persons who are botanists, rather than general admirers of scenery, because it is best calculated for displaying the individual beauty of trees and plants, and the high order and keeping of lawns, walks, &c.; and the third for persons of a romantic or sentimental turn of mind, who delight in surrounding themselves with scenery associated with a station in life strongly opposed to that in which they are really placed; or to attract attention by producing a striking contrast to refined and artistical scenery, whether in the irregular or geometric styles.

64. *In addition to those principles which are common to architecture and landscape gardening*, there are some which are peculiar to each. These, it must be at once obvious, are very different in the two arts; since, in the one, viz. architecture, the artist has to operate with inanimate matter, in consequence of which his productions are most perfect the moment after they are finished; while, in the other, he has to operate with materials which live and grow, and the effect of which depends on time and future management.

Permanence may be said to be the principle which is peculiarly characteristic of architecture, and which leads to all the various subordinate principles and rules taught by the art of building; such as stability of position, durability of materials, strength of construction, &c.

Progress may be said to be the peculiar principle which is characteristic of landscape-gardening, and which leads to all the subordinate principles and rules which regulate gardening as an art of culture. Among these are, providing for growth, by suiting the trees to soil, situation, and climate; providing for their future increase in size, by thinning and pruning; providing for all the various points of culture and management; and providing for removal and decay, by the introduction or substitution of young plants.

Every natural change which takes effect on an architectural structure after it is completed, may be considered as a step in its progress to decay; while

every natural change in a garden, after it is completed, and up to a certain point, is a step in its progress to maturity. It is the business of the architect, therefore, to bring his work as near to perfection as he can himself, and to construct it so that it may remain as long as possible without change; while it is that of the landscape-gardener to form his plan and execute it in such a manner, as that it may admit of all those future alterations, such as the removal of trees by thinning, altering their shapes or sizes, pruning, &c., which the progress of trees and shrubs generally, and the growth and habit of particular kinds, will require.

BOOK II.

GROUND PLANS FOR LAYING OUT AND PLANTING COUNTRY HOUSES AND VILLAS OF VARIOUS KINDS.

65. *Country houses* may be divided into three classes.

(1.) *Suburban residences.* These may be subdivided into two kinds; viz. those of the smallest kind, which form a continuous row, or street, with small gardens before and behind each house, the whole of the garden ground varying from one-fourth to half an acre; and those of the larger kind, which, though they form part of a broken row or street, are wholly or partly detached from the other houses, and have often gardens of considerable size, which surround the house, either entirely, or on three sides. The larger villas of this kind have pleasure-grounds from half an acre to two acres in extent, and comprise a lawn, shrubbery, flower-garden, and kitchen-garden.

(2.) *Country villas,* each standing in its own pleasure-grounds; with an approach-road, or sweep up to the house; a walled kitchen-garden, with forcing-houses; and stable offices. The extent of gardens of this class is from two to ten acres.

(3.) *Country mansions,* which have each a park, pleasure-grounds, separate gardens and hot-houses, and sometimes a farm attached: the extent of the grounds being from ten acres upwards.

We shall describe each of these kinds of country-houses in succession; first making some general observations common to all dwellings of each class; and then giving a few ground plans, as examples of each kind, and adding all the necessary details.

CHAPTER I.

SUBURBAN RESIDENCES.

66. *The word "Suburban"* implies the neighbourhood of a town; and consequently houses of this class are always found within a short distance of a town or village, if they do not actually form part of one. Those of the smallest

class, indeed, differ but little in their external appearance from ordinary street houses, except in having a little garden before them: whereas those of the larger class closely resemble country villas, except in having smaller gardens, and in being frequently built in pairs.

We shall first give some general observations on all suburban houses, and then take the different kinds in detail.

SECTION I.

GENERAL OBSERVATIONS ON SUBURBAN RESIDENCES.

67. *As there are several circumstances connected with suburban houses*, different from other houses, but which exercise considerable influence upon the health and comfort of the occupier, we shall endeavour to point them out separately.

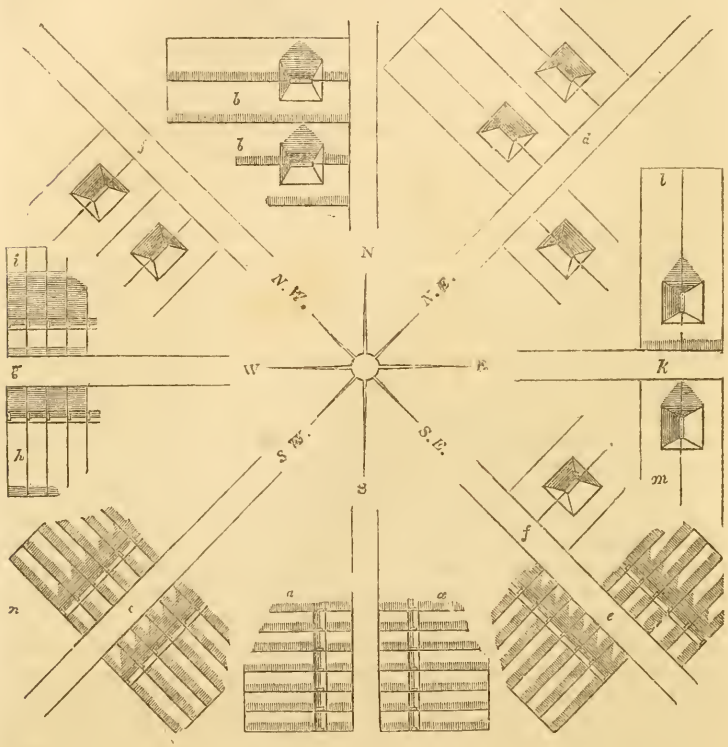
68. *The garden* being one of the principal objects in a suburban residence, its shape or outline should be first considered; and, in the case of residences of the smallest size, this is of great importance. A narrow slip of ground, as it must be enclosed, must always include an atmosphere more or less stagnate, and unfit for the purposes of breathing, or walking in, gardening, and even of drying clothes. A form approaching to a square or a circle, will generally be found to admit, in the greatest degree, the influence of the sun and wind, and to be the most advantageous for domestic purposes, as well as for gardening. On a larger scale, the shape of the ground is comparatively of little consequence in point of health; though, with regard to variety within the enclosure, it is of the greatest moment. In this case, a long narrow slip may have advantages, instead of disadvantages, by increasing the extent of the home views from the house; by lengthening the straight walks of the garden; and even, in some cases, by affording an opportunity of forming an avenue of trees as an approach-road. When the piece of ground is long, and the outline circuitous, then the opportunity of varying the interior by planting, and by extending the walks, is much increased; and when to length and circuitousness is added irregularity in breadth, everything, as far as beauty is concerned, is obtained that can be desired in point of form. Where economy is the great object with reference to shape, then that form which requires the smallest quantity of boundary fencing will be the best; and this is obviously the square or the parallelogram. Theoretically, the circle or the polygon would be more perfect; but in practice, the application of these figures would be found inconvenient.

69. *The position of the house* relatively to the shape or outline of the plan of the garden in which it stands, is a matter of importance in residences of the smallest size. The reason is, the house may be so placed as to throw a shadow over a great part of the garden every day in the year; or it may be so placed as to throw no shadow on it at any time, or only a partial shadow. The great disadvantage which every small garden has, as compared with a large garden, is the shadow thrown on it by the boundary walls, or by the house or adjoining houses; and, if an intending occupant will bear this in mind while looking out for a house, it will aid him in obtaining what ought

to be considered a great desideratum in a suburban residence; viz. a garden but moderately shaded by walls and houses. In the case of a road in the direction of east and west, with houses and gardens on the north side of it, if the houses in these gardens are placed next or near to the road, it is evident that they will shade great part of the garden behind them every day in the year; and, on the other hand, if the houses are placed at the farther extremity of the garden, that they will shade no part of it any day in the year. In this latter case, the garden, even in London (along the south side of the New Road, for example), might be rendered very ornamental, both from the street or road, and from the house of the occupant; while in the former, it never could (as is actually the case with the gardens on the north side of the New Road) be made productive of either much beauty or much use. In the cases of the houses and gardens along the south side of a road running from east to west, if the houses are placed close to the road, the whole of the garden will be exposed to the sun every day in the year. We do not state these facts with a view of leading to the conclusion, that all houses on the south side of an east and west road should be built close to it, and all those on the north side as far from it as the garden will permit; but, simply, to impress on the minds of our readers, who have a suburban residence yet to choose, the great importance of taking the subject of shade and sunshine into consideration when a garden is one of their main objects; and to enable those who already have suburban residences, to determine whether their gardens are suitable for the culture of the finer plants, or only for more ordinary productions.

70. *The artificial aspect*, in the case of very small plots of ground, is even of more importance than the shape; but when the extent of ground amounts to an acre or upwards, the aspect can scarcely be said to be artificial, as it does not depend upon the boundary fences, or other artificial objects. If we imagine a narrow slip (say about 20 ft. or 30 ft. in breadth, which is the general width of the gardens of the smallest suburban houses in the neighbourhood of London), placed in the direction of east and west, and that the fences are 10 ft. high, it is evident that the greater part of that garden will be in the shade every day in the year; and the whole of it will be under shade at least two months every winter. On the contrary, if a plot of ground of the same width, and with fences of the same height, be placed in the direction of north and south, the sun will shine on every part of it during the warmest portion of every day in the year. In the latter garden, in the climate of London, peaches and grapes might be ripened; while in the former, nothing would thrive but ivy, and a few of the commoner shrubs and herbaceous plants. The first point, therefore, to be taken into consideration, in contriving how the gardens of suburban residences are to be laid out and planted, is, to ascertain how far the surface of the garden, and the walls or other fences by which it is bounded, are exposed to the rays of the sun throughout the year. On the degree of exposure to the sun all the future operations depend; for this must determine the kinds of trees and plants that will thrive in the garden; and on these trees and plants necessarily depends the kind of soil that ought to be procured for growing them in, or the improvement that ought to be bestowed on the soil already there, as well as the future culture of the whole. *Fig.* 21. is a diagram, representing the four leading directions of streets which occur in towns and their suburbs; and the bare inspection of this figure will show what positions are most favourable

for the admission of the sun to the surface and boundary walls of the gardens, as well as to the different sides of the houses, throughout the year. In this figure, *a a* represents two rows of houses placed in a direction parallel to a



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street running north and south, in the gardens of which there will be no shadows at midday throughout the year, but those of the separation fences: if these are low, or if they are of open work, their shade will do very little injury; and, unless the situation is surrounded by a very smoky atmosphere, peaches and grapes may be ripened in the climate of London, on the wall which faces the south. Ivy or ornamental creepers may be grown on the wall having a northern exposure; and almost any kind of plant thought desirable may be cultivated in the interior of the garden; provided such trees or shrubs as may be planted there are not allowed to grow to such a height as to shade the peach wall.

At *b b* two pairs of houses are shown; the fronts of which are also parallel to a north and south road, and the gardens of which have nearly the same advantages as those shown at *a*, except that a small portion of the garden of the house next the north will be in the shade during the greater part of the winter season; as shown by the triangular shadow thrown upon that garden in the diagram.

At *c* are two rows of houses similar to those at *a*; but, as their direction is south-west, the sun will shine on both sides of these houses, and both on their front and back-gardens, every day on which he appears, throughout the year. The small proportion of shadow which these houses will throw upon their gardens may be considered as represented by the triangular masses of shade on the front gardens on one side of the road, and on the back gardens on the other. The actual shadow thrown by a row of connected houses on the ground, would, of course, be a parallelogram, and not a series of triangles; but our object in giving this diagram is not so much to show the actual shadows that will be thrown at any particular time upon the ground, as to indicate the proportion of shadow which one position of the house and garden fences will throw on the ground relatively to what will be done by another position. In the double detached houses, *b*, *d*, *f*, &c., the proportion of shadow which we have shown in the diagram also indicates the part of the garden which will be most in shade throughout the year. The walls of those gardens which have a south-east exposure, will ripen figs, apricots, and the finer plums; while those having a north-west exposure, may be devoted to currants or morello cherries; or to roses, and the finer kinds of ornamental creepers.

At *d*, on both sides of a road in the same direction, are shown double detached houses, the gardens of which have similar advantages to those at *c*, but increased in consequence of the houses being detached, and their diagonals being south and north, which admits of the sun shining all round them on every day on which he appears.

At *f f*, on a road in the direction of south-east and north-west, are shown double detached houses, square in the plan; the diagonals of which, being directly south and north, their exterior walls and their gardens will have nearly the same advantages as those of the houses shown at *d;* but with this difference, that a wall having a south-west aspect is not considered quite so good for ripening the finer fruits, or growing the more delicate creepers, as one facing the south-east.

At *g* are shown two rows of houses on the north and south sides of a road running east and west; by which it will be seen that the front or street gardens of the houses on the south side of the road, will be entirely in the shade during the greater part of the winter; while the gardens behind these houses will be entirely in the sun throughout the year. As the side walls of these gardens (at *h*) can only enjoy the sun one half of every day, neither of them are fit for ripening the finer fruits; but both of them will grow plums and cherries, and both are admirably adapted for ornamental climbers. Against the wall at the farther end of the garden, which will be in the shade almost every day in the year, ivy and some very hardy climbers may be planted, such as the Virginian creeper and the Ayrshire rose: and against the house at the opposite end, which will be fully in the sun every day in the year, may be planted a vine and a fig; the latter to cover the lower part of the wall, as high as the first-floor windows, and the former to clothe the upper part as high as the roof. The walks of such gardens will be equally dry on both sides of the garden, because one boundary wall does not throw more shade on the walk running parallel to it, and near it, than the other; and, provided the cross walk at the south end is kept at such a distance from the end wall, or boundary fence, as not to be shaded by it, it will be as dry as the side walks. Hence, these gardens are more favourable for invalids to walk in during winter, and immedi-

ately after rains, than those can be where one of the side walks is chiefly in shade, as will be the case in the gardens of the houses at *a a*. The front gardens of the houses on the north side of this east and west road will enjoy the sun throughout the day during the whole year, and are, therefore, unless the road is very dusty, suitable for the culture of the finer flowers and shrubs. The gardens at *i*, behind these houses, are, however, the most unfortunate of all in point of aspect; for one half of them will be entirely under shade during the whole of the winter months, and also during a considerable portion of both the spring and autumn. Only the small portion of wall at the bottom of this garden, which forms the end of it, is fit for the finer fruits; the remainder should be covered with ornamental climbers: and the walks, during the greater part of the year, will unavoidably be cold and damp.

At *k* are shown two pairs of houses, one on the south and the other on the north side of an east and west road, which partake more or less of the character of the houses shown at *g*: but the two gardens at *m*, being open and airy, will be very suitable for taking exercise in throughout the year; and a vine or a fig may be placed on the south side of the house. The gardens at *l* will not be much inferior to those at *m*, in consequence of the sun being admitted to the sides of the house as well as to its front. In this case, as in the gardens of the houses at *d*, *b*, and *f*, the great advantage of detached houses, in point of the enjoyment of the sun and air, is obvious.

Single detached houses, it will be sufficiently obvious, are subjected to the same laws respecting shade as detached houses which are in pairs.

71. *Where narrow slips of garden ground* are necessarily placed east and west, the fences between them ought to be as low as can be permitted if opaque, or to be composed of open iron railings. For the sake of seclusion these railings may be covered during the summer season, when the occupants are most in their gardens, with deciduous creepers, such as scarlet runners, nasturtiums, sweet peas, or that splendid plant, the everlasting pea; but, during winter, they should be left naked, to admit the sun to dry and warm the soil. The aspect of the ground in the case of larger gardens is of less consequence; as, from their greater width, the space shaded by the wall bears a smaller proportion to the entire area.

72. *The artificial exposure*, in the case of houses and gardens on a small scale, is no less affected by local circumstances than the natural exposure, in houses on a large scale, is by such as are of a permanent nature. We have shown that an irregular surface has always more or less an irregular climate, and that the side of a hill naturally sheltered may be exposed to a current of wind, reflected or turned out of its natural direction by an adjoining hill. On the very same principles, a house in a sheltered or favourably-exposed situation may be injured by a current of wind directed against it by adjoining houses, or by trees; and this, as every one knows, is one grand cause of smoky chimneys. An attentive observer of the chimney-tops of the houses in the suburbs of London will find that those which have most of these unsightly contrivances for preventing smoking, are generally small houses near large ones, or near large trees. In the case of regular streets, where the houses are all of nearly the same size, or of houses that are completely isolated, a common chimney-pot will be found sufficient.

73.—*The direction of the road* leading to a suburban residence is not beneath notice. We have shown that, on a small scale, where the houses and

gardens are placed in rows parallel to the road, the direction of the road is of the utmost consequence with reference to the enjoyment of sunshine. Where the road is in the direction of the prevailing winds of the country, the dust, in summer, will be blown in the direction of that road, and will consequently prove a much greater annoyance to the traveller, than where the road is in a direction contrary to that of the wind. About London, the prevailing winds are from the west, or from the east; and hence the roads to Edgeware, Hampstead, &c., on the north, and to Epsom, Croydon, &c., on the south, are much less disagreeable to travel on than those to Uxbridge and Brentford, or in the Essex direction. The dust from the roads running north and south is blown off them into the fields; whereas in the roads running east and west, whether the wind is in the east or in the west, the dust is blown along them. It must not be forgotten, however, that those roads which have the dust blown from them are the least eligible for having small houses and gardens placed close to them, as the dust from the road is blown upon such houses and gardens. The road which is most covered with dust in summer will be most covered with mud in winter, unless the dust be removed when it is first turned into mud. The wetness of the surface of a road during winter, all other circumstances being the same, will be great in proportion as it is in the direction of the wind, and is shaded from the sun. Hence, about London, those roads which are in the direction of east and west are decidedly the wettest during winter; because they are in the direction of the prevailing winds, which blow the moisture along them as the dust was blown in summer, instead of blowing it off them; and because they are all more or less shaded by fences, houses, and trees on the south side. Hence, also, the houses on the sides of roads which run east and west, ought to be placed farther from them than is necessary in the case of roads running north and south. A road which runs east and west affords shade to the pedestrian at least till between two and three o'clock of every day throughout the year; so that a citizen whose residence is along such a road may always walk to town in the shade; while, on the other hand, if, during the six months of summer, he returns from town to his residence between three and six o'clock, he will have the sun full in his face. A road in the direction of north and south affords shade to the pedestrian early in the morning, and in the evening; but, on going to town during the day along the road from his house in the north suburbs, the traveller will have the sun full in his face; while on going to town along a road from the south suburbs, it will be on his back. These remarks apply strictly to roads which are straight, and which have no other objects along them to produce shade but fences 8 ft. or 10 ft. high; but, where the roads are winding, and bordered by trees or houses, or both, the influence of the sun is in a great measure neutralised; and, as far as respects the enjoyment of shade, roads in different directions will be nearly equal. The same remarks will also apply with respect to dust being blown along the road, or off the road; since, if we imagine the road in a serpentine or zigzag direction, the wind, from whatever quarter it may come, will blow the dust alternately off the road, and along the road. Nothing, however, can be more certain than this, that, in the climate of Britain, all roads and walks in the direction of north and south are much sooner dried after being wet, and much more comfortable to travel on in winter, than roads in the direction of east and west. This may be observed even in the streets of towns in the winter

season; and also in the gravel walks of walled gardens, and in the avenues through woods.

74. *The height or level of the road relatively to the height or level of the ground floor of the house*, may seem almost too insignificant a subject to be noticed as a separate desideratum. In practice, however, it is of very considerable importance. No house that stands on a lower level than the adjoining road ever yet looked well; unless, indeed, the extent of the scenery was so great, and the house at such a distance, and so decidedly below the level of the road, as not to tempt the comparison. Every one feels that there is always something mean in looking down upon an object, or in descending to it; while, on the contrary, there is always something dignified and commanding in ascending to one. The truth or falsity of these positions any one may prove, by observing the front gardens of houses, even of the smallest size, in the neighbourhood of London, Edinburgh, or any large town. Where the front garden ascends towards the house, there is an appearance of dignity, dryness, and comfort; but, where it descends, we receive from it the impression of meanness, dampness, and unwholesomeness. Even in the choice of a street, or of a public road, on which to choose or build a residence, it is desirable, if it can be done without sacrificing more important objects, to fix on one that ascends towards the residence, rather than descends. In all cases of this kind the absolute elevation is, in a great measure, out of the question; the effect is produced by the elevation or depression of the spot on which the house stands, relatively, to a near object; and it can, in all suburban residences of moderate extent, be completely effected by art, whatever may be the natural character of the surface. Let it be observed, however, that this evil can only be avoided before the house is built, and afterwards is past remedy, for, when once the house is set down on a piece of ground on a lower level than the adjoining road, and the ground floor is on a level with the surface, or even if it is only a little above it, it is beyond the art of man to give a character of dignity to the house All that he can do is to raise the ground round it and between it and the house or road, in effecting which a portion of the house is necessarily buried; and, while a part of its dignity is lost by diminishing its height, the expression of meanness, and the actual unwholesomeness, are aggravated by having to descend to the parlour, or ground floor, by steps. Many villa houses and large mansions in England have been spoiled, both in regard to effect and use, as well as rendered unwholesome, by earthing them up, in order to give them the appearance of being situated on a level, or on a gentle elevation. It is better, in general, to submit to the first evil, rather than to incur another which is greater. What we would recommend, in the case of small suburban houses built on a lower level than the adjoining street, would be to shut out the lower part of the house from the road, by a wall or open fence, so that the relative levels of the house and road might not be observed; then to scoop out the ground between the house, and the door opening to the road; and to arrange the walk so that the entrance-door to the house could not be seen till the person walking on it had arrived at the lowest part of the intervening walk, from which he might ascend to the house. A great deal more might be said on this subject; but to one class of readers we need only add, bear in mind that elevation is dignity, and depression meanness; and to another, who require principles to be reduced to rules, avoid a house to which

you have to descend, either through the front garden or grounds, or by steps outside or within the house.

75. *The size of suburban gardens* generally varies from 50 ft. to 300 ft. in length, and from 20 ft. to 100 ft. in breadth; at least we shall take these dimensions as those of the gardens we are about to describe; and it may be here observed that the same modes of planting and laying out are applicable to all the plots between these two extremes, and even to larger and smaller ones attached to houses, forming part of a street or row. The soil of such a plot, whether large or small, we may suppose to be a loam more or less light or heavy; that soil being more common than any other in the neighbourhood of towns, because they are generally built in valleys or on plains, where the soil is most commonly alluvial or clayey, though sometimes it is sandy or gravelly. The surface of the ground within the given limits can scarcely be otherwise than tolerably even; for though it may slope in some directions, and have some holes and protuberances, from accidental circumstances, it can scarcely have any natural undulations. The extent and the kind of ground being given, the first things to be considered are, the supply of water or of gas to the house, if by pipes that come through the garden; the pump or well, if water is not laid on; the outbuildings, if any; the under-drainage of the ground; the surface drainage; the number and direction of the walks; the improvement of the texture of the soil; and the arrangement for posts for drying clothes.

76. *Pipes through the garden, for water or gas, &c.*—As most houses in the neighbourhood of large towns are supplied with water from public sources, by means of small pipes laid from a main pipe in the street to the cistern or cisterns in the house, one of the first things to be attended to, in contriving the arrangement of the front garden, is to fix on the place where the service pipe, as it is called, shall be laid down. The object should be, to secure the pipe from frost throughout the whole of its length, and to admit of its being laid bare, when necessary, for repairs, with as little derangement to the garden, and especially to the walks, as possible. The service water-pipe commonly enters the front garden under the sill of the street entrance or gate, and is conducted along one side of the walk, or through that part of the lawn, or front garden, on which there are few trees or shrubs, to the cisterns in the house or in the area. The depth of the trench, in the bottom of which the pipe is laid, ought not to be less than 3 ft., in order to secure it from frost; and if, in any part, it passes through ground which is likely to be occasionally trenched, there ought to be a line of bricks or tiles placed immediately over the pipe, to protect it from the mattock or spade. Suburban houses are frequently supplied with gas from the mains, which are carried along the streets for the public lamps, for a lamp outside the front door, and sometimes for light in the house; and probably gas will ere long be required, even in fourth-rate houses, for the purposes of cookery. The service-pipes for conveying gas need not be laid deeper in the soil than 1 ft., as they are not liable to be injured by frost; but, like the water-pipes, they ought to be protected, by bricks or tiles, from the risk of the spade, when the gravel of the walks is turned or flower-beds are dug; and, like them, they should be laid down in such a direction as that, when repairs are wanted, they may occasion as little derangement of the surface of the ground as possible. In general, the gas-pipe should not be laid directly over the water-pipe; because, in that case, the latter could not be laid bare and examined without disturbing the former. If, however, the water-

pipe is laid so deep as to be out of the reach of frost, or of being disturbed by the spade, it is not likely to require repair for many years, or even a life-time; except at its junction with the main pipe in the street, and with the cistern in the house or in the area; and, in such a case, the gas-pipe may be laid over it. That part of the water-pipe which rises out of the ground to supply the cistern, if not carefully protected by a thick casing of charcoal, ashes, or sand, enclosed in brickwork, will be liable to be frozen and to burst every winter; more especially where the cistern is placed in the area. The connection, indeed, of the service water-pipe with the cisterns of a house is one of the most difficult points which the builder has to manage. It is very commonly got over by directing the servants of the occupier, when the winter approaches, to wrap straw round the pipes where they join the cistern; or, perhaps, a cock is so placed as to enable the servants to empty the service-pipe, or that portion of it next the cistern, every time that the cistern is filled; but, as these precautionary measures are commonly delayed till after a severe frost has occurred, the pipes are generally burst once or twice every winter, and the plumber requires to be called in accordingly. The greatest care, therefore, is requisite to have the service water-pipe rendered perfectly secure from frost, from the point where it leaves the main in the street, to the orifice of the cock which delivers the water to the cistern; and builders and occupiers should insist on their plumbers making sure of this result.

77. *Out-buildings, pump or well, &c.*—In gardens to suburban houses, a dust-hole is essential; and a privy is sometimes required either as a substitute for, or in addition to, a water-closet in the house. Both these ought to be placed close to the house behind, and near the back door, in order that they may be as conveniently reached as possible. At the bottoms of gardens, even of the smallest size, it will generally be found useful to have a shed for lumber, clothes-posts, old wood for fuel, &c.; and a pit, 3 ft. square and 2 ft. deep, lined with brick or stone, for such rubbish as will rot into manure. There should also, wherever it is practicable, be a pump or well, because, even if it does not supply water fit for the kitchen, it will at least be useful for watering the garden, and in case of fire. If the occupier is much attached to gardening, and intends to cultivate culinary vegetables, a manure tank, for liquid manure (which might serve in some cases as a cesspool for the privy), would be found useful; and if it were properly constructed of brick laid in cement, with a closely-fitted covering stone, it would be attended with no offensive smell. When the family washing is performed at home, the soap-suds should always be emptied into this tank, as, after they have fermented for some time, they make excellent manure. It is convenient to have the shed, well, &c., at the lower part of the garden; or, if they should be placed in any other part, to have them hidden from the windows of the house, and from those of the adjoining houses, by evergreen trees and shrubs. In some cases there may be one or more bowers, or covered seats; and these, and also architectural ornaments and green-houses, or other plant-houses, if they are required, ought to be taken into consideration before determining on the position of the drains, and the direction of the walks.

78. *Drainage, walks, and texture of the soil, &c.*—The ground, where not naturally dry, ought to be perfectly under-drained, by drains down the middle of both the front and back gardens, communicating with the public sewer, or with some other main drain; or, if the back garden be large, and the soil

very wet, there may be a drain along one side of each of the side walks: to these drains there ought to be communications, with gratings at regular distances, if the walks are above 100 ft. in length; but, if they are shorter, one grating, in the lowest part of the garden, will be sufficient. If the garden be 50 ft. or 60 ft. broad, the soil a very strong clay, and the surface flat, there ought not only to be drains to the walks, but drains to the part of the garden kept under kitchen crops or flowers, and also to those parts which are kept under grass. Nothing contributes more to the comfort afforded by a garden on a strong clayey soil, than thorough drainage; without which it is impossible to walk out in it after a shower of rain, though this is generally one of the most delightful times in which a garden can be viewed by a person fond of gardening. In very small gardens, where it is not considered necessary to have under-drains, it will be sufficient to direct the water by the surface-drainage to one point, where it may sink into the soil. The proper execution of the surface-drainage is of the utmost importance to the enjoyment of every description of garden, whether large or small; more especially of all such as are on loamy or clayey soils. For this reason, even, in some cases, before determining on the under-drainage of the back garden, the surface-drainage ought to be attended to by smoothing down all the inequalities of the ground, and by forming it so as to give it an inclination, or slope, to some one part in the garden, generally that which is the most distant from the house. To this point all the rain water that falls on the walks should run, and find an exit either by a porous subsoil, or by a grating communicating with an under-drain. In back gardens of great length, it may happen that the middle is the lowest part of the surface; and when this is the case, the surface water ought to be directed thither from both extremities; but in suburban gardens it seldom happens that the surface may not be made to slope from the house to the extreme end of the back garden, even though it should be 200 ft. in length. In regard to front gardens, if the walk and the lawn have an inclination from the house to the street, that will generally be found sufficient. The surface-drainage, and also the under drainage, being determined on in the mind of the artist, we shall suppose that he has had the surface of the ground, both before and behind the house, sloped accordingly. The next point is to determine the number and direction of the walks; because it is alongside of them that the under-drains are commonly formed with the greatest advantage. In all small gardens, the object is to get as long a walk as possible; and the longest line within any given space must necessarily be that which goes round it. The direction and position of the walks is therefore easily settled. The next point is to determine where the drains are to be placed, and to have them dug and filled in, the manner of doing which will be treated of under the head of garden operations. The walks may be then hollowed out, in the manner which will also be hereafter described; and the ground which is to be planted or covered with turf may be trenched to the depth of 2 ft. or 3 ft.; and, in performing this operation, if the soil requires to be rendered lighter, or more porous, which is always the case with a strong clay, it ought to be mixed with lime rubbish, gravel, or sand, or with all of these, to such an extent as to render it readily pervious to water. It is more especially necessary to do this in those parts of the garden which are most in shade; particularly on the north side of the house, when it fronts the south. The ground being trenched, and the walks hollowed out, the whole should remain some weeks,

and, if convenient, one whole winter, to settle, before the final smoothing of the surface, the gravelling or paving of the walks, the edging of them, and the planting of the trees and shrubs. When so much time cannot be allowed for the ground to settle, it is better not to trench it under where the walks and their edgings are to be placed, but merely to dig it; because, when trenched ground does not settle evenly, which it very seldom does, the materials of which the walk is formed, and its edgings, require, after a few months, to be taken up and relaid.

79. *Arrangements for posts to support clothes-lines.*—One considerable advantage of a suburban residence to most families, and particularly to such as have children, is, that they are enabled by it to wash at home, and have their clothes dried in the open air. In the country, clothes are generally dried on hedges or bushes; but in suburban gardens they are commonly hung on lines which are stretched from post to post along one side, or round the entire garden. In gardens to houses of the smallest size, these posts are commonly fixed in the ground, and the lines fastened to them on washing days, and taken down when not wanted; but, in all the better description of gardens, sockets, which have been previously fitted to the lower part of the posts, are fixed in the ground; and into these the posts are inserted on washing days, and the lines attached to them. When the clothes are dried, and the lines are also dry, and have been taken off and laid in a dry part of the wash-house or back kitchen, the posts are taken up out of the sockets, and put somewhere under cover. If there is no shed, they may be laid on brackets projecting from the boundary wall, with a coping board close over them to throw off the rain.

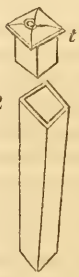

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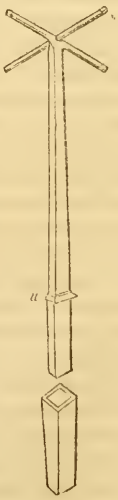
Fig. 22. shows the socket for the clothes-post: it is made of four pieces of board, forming a rectangular tube, rather narrower at the lower end; and *t* is a cap, or cover, also of wood, with a ring in the top for lifting it off, which is put on when the posts are not in use, to prevent the socket from being filled up with dirt and stones; the length of the tube forming the socket is generally about 18 in., and the width inside about 4 in. at top, and 3 in. at bottom. *Fig.* 23. represents a clothes-post: it has a shoulder at the lower end (at *u*), to prevent it from being wedged too firmly into the socket; and two pins (*v*) passed through the top, in opposite directions, for the purpose of fastening the lines. In some gardens the lines are fastened to trees, or stretched across the garden from hooks in the side walls; but the most convenient position is along the sides of the walks, over the margin of the turf, so that a person may stand upon the walk while hanging up and taking down the clothes.



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80. *A green-house, orangery, or conservatory,* ought, if possible, to be attached to every suburban residence. The custom of rearing plants in pots, and keeping them in the windows of dwelling-houses, is of great antiquity, though it is only in modern times, and chiefly since the days of Louis XIV., that a house for plants has become a conspicuous feature in the elevation of

a mansion. The most ancient description of plant-house is what is called an orangery; in which formerly orange-trees, planted in large boxes or tubs, were kept during the winter, and set out of doors during the summer season. Such houses almost always fronted the south: the back wall was of masonry, the roof covered with slates, tiles, or lead, and the front contained a range of large glass windows. Beneath the floor there was sometimes a flue for heating; and at other times this purpose was effected by means of German stoves. As the object of the orangery was merely to keep the trees from the frost, and they were not expected to grow while in the house, this description of building suited them perfectly; and it might still be very properly added to a mansion, provided no other plants were placed in it than orange-trees, and a few other evergreen trees or shrubs, and succulent plants, such as myrtles, olives, cactuses, agaves, aloes, &c. Such houses, however, are totally unfit for plants which grow or flower in the winter season; such as camellias, heaths, acacias, and all those Cape and Australian trees and shrubs which, by their flowers and newly-produced foliage, constitute the great charm of British conservatories during the winter months. To render an orangery fit for keeping such plants, it is necessary that the roof should be entirely of glazed frames, to admit perpendicular light, without which no plant in a growing state can thrive; and when this is the case, according to the common usage of gardeners, the building is no longer called an orangery, but a conservatory; a word which appears to have been first applied to plant-houses by Evelyn, in his *Calendarium*. A conservatory, properly speaking, is, however, a house in which beds of earth are formed in the floor, and the trees and shrubs are planted in them, instead of being kept in tubs and boxes. This, indeed, is almost the only kind of plant-house now attached to first-rate mansions. The term green-house is now generally confined to houses having glass roofs, which are kept at the same temperature as the orangery or conservatory, but where the plants are grown in pots, which are usually small, and elevated upon stages, so as to bring them at once near the light and near the eye of the spectator. The characteristic of a conservatory is, that it grows a few plants to a large size, and so as to produce scenery of a magnificent exotic aspect; while that of a green-house is, that it produces a great many different kinds of plants of small size, which may be considered as merely living botanical specimens of exotics. The green-house is, consequently, much better adapted for the smallest description of suburban residences than the conservatory; and a modification of the green-house, which may be called a plant cabinet, or cabinet green-house, in which a few choice plants are kept, and always taken away and renewed as they begin to fade, is, perhaps, still more appropriate. What are called plant-stoves, tropical plant-houses, or hot-houses, in the proper sense of the word, are unfit for being attached to dwelling-houses, from the great heat and moisture required to render their atmosphere fit for the plants of hot climates. We shall give some designs for green-houses and conservatories, with details for their construction, filling with plants, and general management, in a subsequent part of this work.

81. *The enjoyments afforded by a green-house*, however small, to the female part of the family are very considerable; and, where there are children, these enjoyments may be mingled with useful instruction, by teaching them in it the names and nature of plants, and their culture and management at seasons, or during weather, when it cannot be done out of doors. A green-house also

affords exercise, in shifting, potting, tying up, pruning, &c., in cold and wet weather, and at periods of the year when nothing can be done in the open garden. At the same time that we recommend a green-house, it is proper to state that, where the mistress of the house has not a taste for plants, and is not in the habit of working among them herself; and where this taste does not exist in any part of the family, and no gardener is kept, a green-house is in danger of becoming a nuisance rather than an ornamental appendage. In such a case, where it is determined to produce the effect of a green-house, for the sake of fashion, or the reputation of being fond of plants, or some similar motive, the best mode is to engage with the nearest nurseryman or florist to keep the green-house furnished with plants, at so much per annum or per month. By this means it will always look well; but as none of the beauty which it presents will be the result of the care and attention of any part of the family, of course the enjoyment derived from it cannot be anything like so great as where the contrary is the case.

82. *In the smallest suburban houses the common substitute for a green-house is the window-sill;* and the greatest extent to which this kind of gardening can be carried is by having the sill made to project 2 ft. or 3 ft. from the wall of the house, and enclosing it with an outside bow window. Into the space between the two windows the warm air of the room may be admitted at pleasure; and if the panes of both windows are large, and kept at all times perfectly clean, the view into this plant-cabinet from the interior of the room will be agreeable, and create an allusion to the green-house of the villa, or the conservatory of the mansion. For houses that have a garret, a sort of green-house may be established there, by forming glass windows in the roof. An enthusiast amateur might indeed have the roof of his house entirely of glass, and train vines or creepers under it, which might be planted in the ground, and their stems brought up against the outside wall, and covered with a wooden case. In such roofs, the panes of glass should not be more than 2½ in. or 3 in. wide, or plate glass should be used, in order to prevent breakage from hail. The most fitting suburban residences for having green-houses are such as are either quite detached, or in pairs; which last-mentioned houses, in the neighbourhood of London, are called double detached houses. One of the most ordinary modes of connecting a green-house with a small house is by placing it against the gable end; it being understood that this gable end fronts the south, the south-east, or the south-west: though, even if it fronts the direct west or direct east, such a green-house will answer for many kinds of green-house plants, and for all kinds whatever, with an extra allowance of fire heat during winter. For double cottages or houses, where the gable ends front the south-east and north-west, a green-house may be placed against each; but where the one gable fronts the south and the other the north, then the one green-house should be placed on the east side of the house, and the other on the west side. In single houses, the green-house may be placed in a great variety of ways, and may be of many forms, as will be seen hereafter, according to the arrangement of the ground plan, and the style of elevation of the house. In whatever manner a green-house, or plant-house of any description, is attached to a house, means ought always to be provided for warming, ventilating, and watering the plant-house, altogether independently of the dwelling-house; for few things are more disagreeable and unwholesome to human beings, as well as injurious to furniture, and the walls of the room, than the close damp

effluvia from the earth, water, and plants of a conservatory. For this reason, the plants grown in conservatories immediately attached to drawing rooms should be such as are natives of very dry climates (for example, the Cape of Good Hope, Australia, &c.), and, consequently, require very little water; and the gardener should contrive to give his waterings either late in the evening, or very early in the morning; and previously to the hour the family are likely to visit it the house should be well ventilated.

83. *Leading rules for laying out and planting flower-beds in the gardens of suburban residences.*—The following rules will be found useful in laying out and planting all flower-gardens, but more especially those of suburban residences, where a regular gardener is not kept.

1. Where the space is small, and surrounded by trees and high walls, so as not to be open and airy, it is not desirable to form beds or borders round the margin of the plot, but rather to have only one bed in the centre, and the rest in grass.

2. Where the space is open and airy, either large or small beds may be formed; and it will generally be desirable to surround the whole plot with a narrow border. If the ground-floor of the house is 2 ft. or 3 ft. above the level of the plot, then a figure, or collection of beds, may be laid out, which shall be looked down upon from the window as a whole; and, consequently, to aid this purpose, the beds ought to be planted with low-growing plants, and, in general, to have the surface covered by them; each bed, in this case, being of only one kind of plant.

3. Where the rooms on the ground-floor are on a level with the surface of the front garden, or nearly so, large plants may be employed in the beds, provided the beds also are large; because, as in this case the beds cannot be looked down upon, and, consequently, their plan can never be taken in at one glance, they never can be seen as a whole from above. It is better, therefore, to use large plants, which, by growing of such a height as to form a whole, or group, when looked at laterally, will prevent the idea of a whole formed by the shapes and lines of the beds, when seen from above, having been intended by the planter.

4. In general, no figure or assemblage of beds of any degree of intricacy, and where the beauty is dependent on the shapes of the beds and their connection together, should be formed where it cannot be looked down on so as to be seen all at once. In general, also, parterres, or assemblages of figures of this kind, should only be planted with very low plants, which will not obstruct any part of the outline of the figures; with the exception, however, of an occasional tall plant, such as a standard rose, to produce effect by contrast. It may be further observed, that, when plants are to remain permanently, such should be chosen as continue in flower for a long period (say two or three months), in preference to such as complete their time of flowering in a short period, say two or three weeks. On the other hand, when flower-beds are furnished with plants in pots plunged in the soil, with a view to changing them, and replacing them by others as soon as they have done flowering, plants which remain a short time in flower should be chosen; because these have, in general, a greater number of blooms expanded at the same time, and, consequently, while they last, they have a more brilliant effect. This is particularly exemplified in the case of bulbous flowers, and in certain annuals, such as candytuft, ten-week stock, &c.

5. Where a symmetrical figure is employed, beds which answer to each other in form and position ought to be filled with plants, either of the same kind, or of the same general appearance, and which flower at the same time: for example, a bed of mixed hyacinths can only be properly opposed to another bed of mixed hyacinths; but the mixtures need not be the same in both beds. A bed of the small dwarf blue lobelia, may be opposed to a bed of the blue anagallis, and so on.

6. Where it is desirable not to have more than one plant of a species, in a symmetrical figure consisting of various beds, the principle of symmetry may be preserved in planting by placing each colour by itself. Thus, a bed of white flowers, consisting of ten plants of as many different species, may be opposed to another bed of ten other different species, also with white flowers.

7. The dug surface of beds formed on a grass plot ought either to be decidedly under the

surface of the grass, or decidedly above its level, in order to increase the expression of art, and to take away from the common-place idea of merely digging down a portion of the turf of a particular shape, and planting it with flowers.

8. In the case of flower-beds on turf or lawn, where a regular gardener is not kept, the outlines of the beds ought to be formed by concealed brickwork, masonry, tiles, or slates, otherwise, every time the grass is mown, and the edges of the bed trimmed with the spade, and, especially, every time the beds are dug, their outlines will be liable to be put out of shape. Where common bricks and plain tiles can be procured, the simplest mode of fixing the outlines of the beds or borders is by forming an underground outline, if the expression may be used, by tiles or bricks laid on their broad sides, at an angle of 45°, as shown in the section, *fig.* 24.; in which *a* is the brick, *b* the surface of the grass, and *c* the surface of the dug bed, decidedly under the level of the grass plot, agreeably to Rule 7. On the other hand, when the surface of the dug bed is to be above the level of the turf, agreeably to the same rule, the brick should be placed as at *d* in *fig.* 25.; the turf kept to the level shown at *e*, and the surface of the bed to the level shown at *f*. When plain tiles are to be used instead of bricks, they may either be let into the ground perpendicularly, and their upper edge kept to the level of whichever surface is to be the highest (viz. that of the grass plot, or the bed); or they may be laid sloping in the same manner as the bricks, which will form a very delicate outline, well adapted for beds in small front gardens. By using semicircular tiles, and inserting them perpendicularly in the soil, very neat curvilinear outlines may be formed; but such tiles cannot be used in a sloping direction, like bricks or plain tiles. *Fig.* 26. shows the tiles let in perpendicularly, forming a bed 2 in. higher than the surrounding turf. *Fig.* 27. shows the tiles let in in the same manner, and the bed made 2 in. lower than the surrounding turf. *Fig.* 28. shows the tiles laid in, in a sloping manner, so as to form a bed the thickness of the tile only under the level of the turf; and *fig.* 29. shows the tiles so arranged as to form a bed only the thickness of the tile higher than the surrounding turf. *Fig.* 30. is a surface plan, showing the manner of forming the outlines of beds with semicircular tiles.

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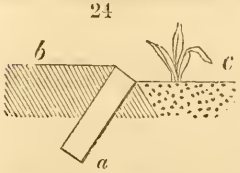

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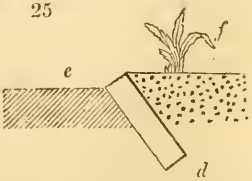

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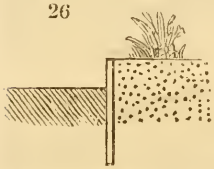

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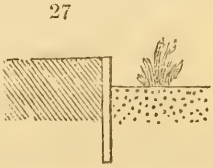

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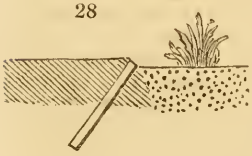

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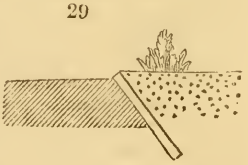

9. Where it is desired to express high art, every bed or border ought to be surrounded; or, if the border be against a wall, bordered on one side, with either a raised or a depressed framework of turf, or of stone, or bricks, or pebbles, flints, &c. Where the beds are raised, the plants grown in them should be such as do not require excess of moisture, and which thrive best in a free air; such, for example, as pinks. Where the beds are lowered, an excellent opportunity is afforded of growing plants which require more than ordinary moisture, especially when they are in flower such as ranunculuses, polyanthuses, heart's eases, &c.

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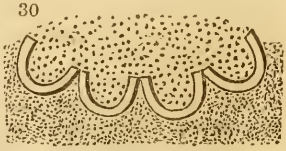

10. Borders of brick or stone, or other architectural materials, ought, in general, to be

narrower than borders of turf, lest the force of contrast should be too great for the general effect.

11. When borders of box or other plants are employed to form margins to flower-beds on turf, they ought to be of several times the breadth which they are when employed to separate walks from gravel, in order to give them a distinctive character, and to produce sufficient force of effect to justify their use. Nothing looks worse than a narrow edging of box, surrounding a bed on turf; the narrow edge of box, appearing, in that situation, to be quite superfluous; and, its colour not contrasting with that of the grass, it has a dead dull appearance.

12. Where beds are surrounded by gravel walks, and edged with box, the latter ought always to be of such a breadth as to form a strongly marked line; and, though the sides of the edging may be clipped so as to give them a slope, and prevent their getting naked close to the surface of the ground, yet the top should always be cut quite flat and level.

13. Nothing looks worse in a flower-garden than to have the box edgings narrow and high; except having the edges of turf margins so pared by the spade as to show the raw naked earth.

84. *Keeping the plants distinct.*—Where there is abundance of room, it is most convenient for culture, to keep perennials, biennials, annuals, and bulbs in beds or compartments by themselves; but, whether the space for flowers be limited, or of considerable extent, when the object is to have an equal display of flowers in spring and autumn, all these different kinds of plants must frequently be mixed together, to make up the colours required; for example, in February, March, and April, very little could be effected in a bed or border of mixed flowers, without the aid of crocuses, scillas, and hyacinths: and, late in autumn, there would be no great display without dahlias, lupines, China asters, marigolds, &c., all which are either tuberous-rooted plants, or annuals. Whatever kinds of flowers may be admitted into a flower-bed or border, one principle of planting must never be lost sight of; that is, distinctness, or the keeping of every particular plant perfectly isolated, and, though near to, yet never allowing it to touch, the adjoining plants. This is merely the principle of the gardenesque applied to flowers; and it is so decidedly preferable, in point of convenience for culture, to planting so close together as that the plants will soon join together and cover the surface of the soil, that we should never for a moment think of recommending what may be called the picturesque in flower-planting, either for a flower-garden or for flowers in borders. We except, however, creepers and low plants, and perhaps plants generally, where the object is to produce one dense mass of any particular colour; because this object cannot be effected without allowing the plants to cover the whole bed. On the same principles of distinctness and suitableness for culture, no shrubs that are not either of very low growth, such as dwarf roses, or that have not very small heads, supported on stems four feet or more in height, should ever be admitted into flower-beds or borders. Dwarf roses, for all practical purposes, may, in effect, be considered as herbaceous plants; since they flower best when kept low by pruning, and when taken up and replanted in fresh soil, every year.

SECTION II.

DESIGNS FOR LAYING OUT AND PLANTING THE GARDENS OF SUBURBAN RESIDENCES FROM ONE PERCH TO TWO ACRES IN EXTENT.

85. *The gardens of houses in a connected street, or row,* which are the smallest in this class, generally consist of two parts, divided from each other by the house, through which the back garden is entered. Both are necessarily of the same width as the house, but the front garden is generally square; while the back garden varies in length, according to circumstances. The side walls or fences are parallel to each other; and they are generally kept low, that they may neither throw too much shade on the garden, nor impede the free circulation of the air. At the end of the back-garden, farthest from the house, there is frequently a door opening into some back road or lane; and if there is a stable, it is placed here.

86. *The gardens of suburban villas, which, though they form a broken street or row, are partially or wholly detached, and stand either singly or in pairs,* also consist of a front and a back garden, but the latter is not entered through the house, there being a strip of ground connecting the two on one side of those houses which stand in pairs, and on both sides of those which are detached. The back garden is, however, still of the same oblong, regular form, enclosed by low straight parallel walls, and terminating in a straight wall opposite the house, and opening into some back road or lane.

87. *It is obvious that gardens thus shaped* can afford little opportunity for taste being displayed in laying them out, and that their chief interest must depend upon the trees, shrubs, and flowers that they contain. It is also evident that unless gardens of this kind are kept in the very highest state of cultivation, they will have a very unpleasing effect; as their whole space is continually before the eyes of the spectator, and as they have no scenic beauty to direct the attention from their untidiness and neglected appearance.

88. *The planting of the front garden* of a suburban residence cannot be much varied. No large trees can be admitted, as they would throw too much shade upon the windows, and there is no space for variety or intricacy in the walks. In most cases, all that is required is a few beds for flowers, which should be kept with the greatest neatness, or a few flowering shrubs, intermixed with evergreens. The situation and size of the garden must, of course, be taken into consideration in deciding which of these plans is the most suitable: if the garden is small and exposed to the sun, it will be best to plant it with showy flowers; but if the garden is in the shade during the greater part of the day, it will be best to plant it with evergreens and flowering shrubs, such as the arbutus and laurestinus. Even a plantation of hollies only, provided a few variegated ones be introduced, has a very good effect.

89. *The laying out and planting* of the back garden admits of much greater variety than the front; particularly when it is the garden of a suburban villa, either wholly or entirely detached from the surrounding houses. It is true, that the shape of the ground, and the formality of the boundaries, must give some-

what of a peculiar character to all gardens of this kind, but still they allow some latitude to taste. The style in which they are laid out, must, however, depend in a great measure on the kind of garden the proprietor may be in want of; but there are three principal points to be kept in view, to which all the various kinds of suburban garden we shall describe may be referred, viz. :—

1. Economy in the first laying out and after-management.
2. Profit as regards the produce.
3. Ornament and enjoyment.

90. *Economy*, when it is to be combined with neatness, and an agreeable appearance, is, perhaps, most easily attained, by covering the greater part of the surface of the ground with grass; and a small garden of this kind might be easily kept in order by the proprietor himself, or an ordinary man-servant, or labourer, by the aid of a mowing machine. There would thus be scarcely any expense in the after-management, and, as a surface of grass when kept regularly mown and swept, is always agreeable to the eye, and has a neat appearance, the garden could be kept in excellent order at the least possible expense. The laying out would also cost as little as possible, as there would be no expense but levelling the ground, making the walks, covering the centre bed with turf, or sowing it with grass-seeds, and planting a few trees and shrubs.

91. *Profit* from the garden of a small street house can scarcely be expected; and, indeed, even where there is a large garden to a suburban villa, almost the only saving that can be hoped for is in the article of fruit; as the vegetables grown in it generally cost more than they could be bought for from a greengrocer. There is, however, a great pleasure in having vegetables from one's own garden; and, indeed, some vegetables are so much better when quite fresh, that it is worth while to take the trouble of growing them. Peas, young cabbages, and various kinds of greens, become tough and insipid when they have been gathered for several days; and it is a great convenience for a cook to have parsley, mint, and other pot-herbs, always ready whenever she may want them. A garden of this kind, however, as it must have a large proportion of dug ground in it, requires a great deal of care to keep it in even tolerable order, and it looks very untidy if it is neglected.

92. *Ornamental gardening* is, however, the most expensive of all modes of keeping a garden; and, indeed, it is scarcely possible to keep even a small ornamental garden in the highest state of order and neatness without a regular gardener, a reserve garden, and a green-house, or pits and frames. In the neighbourhood of London, the best way is to contract with a nurseryman to keep the garden in order, and full of flowers, at a given price per year; but as this takes away a great part of the pleasure of the proprietor and his family in the garden (as we all like things of our own creation, better than what is done for us), a more agreeable plan is to have a gardener once a week to keep the place in order; and to fill the beds with green-house plants purchased from the people who hawk them about in the streets. If the soil and situation are tolerably good, these plants will grow luxuriantly, and produce abundance of flowers from May till September or October, when the plants will be killed by the frost.

We shall now give a few examples of the best manner of laying out and planting suburban gardens, economically, profitably, and ornamentally.

§ 1. *Suburban Gardens in which economy is the principal object in view.*

Design I. *Laying out and planting the gardens of a street house of the smallest size.*

93. *Laying out the ground.—Fig.* 31. shows a plot of ground, in which the

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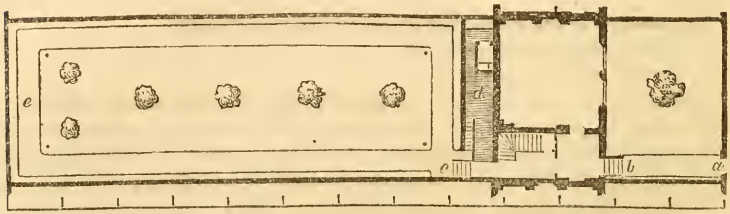

house, which is 30 ft. by 20 ft., has a front garden of nearly the same size, and a back garden about 90 ft. in length by 30 ft. in breadth. The kitchen of the house is half sunk under ground, and the ground floor is ascended to, from both gardens, by five steps. There may be a privy and a dusthole in a sunk area (*d*) at the back of the house, on a level with the kitchen; and at the bottom of the garden there is a board projecting from the wall or fence, which will be covered with ivy, and under which, on two brackets, may be laid (by pushing them in endwise) the clothes-posts, when not in use. The ground having been properly levelled, and drained if necessary, the central bed is marked out, and places for the clothes-posts (§ 79) are sunk at the four corners. There is no manure-tank or well, because no part of the ground is to be dug; but there may be a small pit sunk in the ground, with a cover fitted to it, at the bottom of the garden, at *e*, under the clothes-post bracket, for any decayed leaves or twigs, which may be required to be removed in the intervals between the stated times that a man comes to mow the grass. From the entrance gate or door (*a*), a walk 4 ft. broad is formed to the front door of the house (*b*); along one side of this walk, under the grass, the water service-pipe is laid; and on the other side the gas-pipe, if any. The landing to the back door is at (*c*), under which are a safe or small larder, and also the water-cistern. A small cistern over the privy, at the other end of the area, protected by a double roof, with the interstice stuffed with hay, would render this an excellent water-closet. A walk 3 ft. wide is conducted round the garden, the space between it and the wall forming a border 18 in. in width, except at the bottom, where it is 2 ft. wide, in order to make room for the refuse pit at *e*, over which is the clothes-post bracket. The plot of ground in front, and also the whole of that behind, with the exception of the walks, may be sown with grass seeds, or laid down with turf, and the walks laid with flagstones, or slates, or paved with bricks on edge, instead of being gravelled, in order to save trouble in keeping them in order.

94. *Planting the front garden.*—The boundary fences of the front garden may be planted with gold and silver-leaved ivy, intermixed with a plant or two of the common ivy; and the boundary fences of the back garden may be wholly planted with either the common or the giant ivy, or with a mixture of both. In the centre of the lawn, in the front garden, may be planted a laurestinus, an arbutus, a phillyrea, an aucuba, a double-blossomed furze, Cotoneáster

Uva úrsi, a common or variegated box, an evergreen rhododendron, or some other compact growing hardy evergreen shrub, which may be selected from the descriptive catalogue of hardy evergreen shrubs which we shall give in a future page; or a deciduous flowering shrub may be substituted for an evergreen tree, if there should be chiefly evergreens in the adjoining gardens. Among the beautiful deciduous shrubs of moderate growth which require little or no pruning and management, may be mentioned the *Cydònia* japónica (either the pale or the deep red-flowered variety, or a plant of each put into one hole), the Persian lilac, and the *Rìbes* sanguíneum. Of all these plants the two most suitable are the laurestinus and the *Cydònia* japónica, because neither require any pruning, and both flower in the winter season. As these plants, however, from their beauty, cheapness, and easy culture, may possibly be common in the adjoining gardens, if expense should not be an object, one of the evergreen berberries or mahonias, such as *Bérberis* dealbàta or Mahòn*ia* *A*quifòlium, or Gárry*a* ellíptica (a valuable winter shrub), may be selected as the evergreen; or, if a deciduous shrub be preferred, *S*piræa *a*riæfòlia, or *S.* bélla, or some other species of that genus, or a yellow azalea, may be substituted. These comparatively rare evergreen and deciduous shrubs are as hardy as the others; and, like them, require no pruning whatever, further than cutting off dead wood or dead flowers. But if all the adjoining front gardens are planted with the more rare and beautiful foreign trees and shrubs, and the occupier should have the laudable desire of increasing the general variety in the street, he may step from the garden into the fields, and place in the centre of his grass plot, for an evergreen, the common spurge laurel, or the double-blossomed furze; and for a deciduous shrub (if he should prefer one), the spindle tree, or any dwarf British willow, may be made choice of. Should even these be already introduced, he may have recourse to the pine and fir tribe, and take one of the dwarf varieties of the common spruce, such as *Á*bies excélsa Clanbrasil*iàna*, or a dwarf pine, such as *P*ìnus sylvéstris pumílio, or *P.* s. *Mùghus*.

95. *In the back garden*, we would merely introduce a few standard low flowering trees, or fruit trees, placing them along the centre of the lawn, that they may not interfere with the walks, along the lawn side of which clothes-lines will probably occasionally be placed in the manner before mentioned. (§ 79.) The tree nearest the house should be a double-blossomed hawthorn, because it comes sooner into leaf than any other low tree, and the flowers being double, are not succeeded by fruit, so that the tree is in no year so exhausted but that it can flower abundantly the year following; whereas a single-blossomed thorn, or tree of any kind in which the flowers are succeeded by a large crop of fruit, seldom blossoms well two years in succession. Such trees, therefore, should never be chosen for points of view where it is wished to have a fine show of blossoms every year; but rather trees which, like the above-mentioned variety of thorn, bear double blossoms. The next tree may either be a *P*ỳrus spectábilis, or transparent or Siberian crab, or some description of apple which has showy blossoms and bears abundantly, such as the Hawthornden. The third tree may be a perfumed cherry, standard all-saints' cherry, double-blossomed cherry, an almond, or a Cotoneáster frígida, C. affìnis, or some similar tree, which may be selected from the catalogue of hardy trees and shrubs given hereafter. The next tree may be a mulberry, which thrives and bears abundantly in the very heart of London, and which

should always be planted on grass; because, as the fruit drops the moment it is ripe, it can be picked up clean for use, which it cannot if it falls on dug ground or gravel. The two succeeding trees may be a laburnum and a scarlet thorn; or, if the occupier prefers fruit trees, they may be two pears, say a glout morceau, and a Marie Louise, or a beurré de Capiaumont; or they may be two plums, or cherries: or, if he prefers evergreen trees, they may be two variegated hollies. We recommend the variegated holly, because it is one of the most cheerful of evergreens, and is in no danger of growing out of bounds, so as to require pruning. Next to it, for the climate of London, the cedar of Goa may be planted; but, as the cedar of Goa is somewhat tender, perhaps a preferable plant for a smoky situation would be the *Quércus Ilex*, of which the willow-leaved and beech-leaved varieties may be selected; or, for colder climates, the common red cedar. We have here shown only one line of trees down the centre of the lawn, because they will there have abundance of room: they will not require pruning for many years, and their leaves will drop on the grass, and not litter the walks. When low-growing trees are planted near the walks, their branches hang over them; and every year those which inconvenience persons passing along the walks require to be cut off, or tied up, and this would occasion expense in keeping, which it is one of the desiderata in this mode of laying out and planting to avoid as much as possible. For this reason no tree or shrub is directed to be planted against the house, because that would be to incur the expense of training and pruning. The trees should be procured of 6 ft. or 8 ft. in height, so that their tops may be, when planted, out of the reach of injury from children; and the grass may either be sown, or turf may be procured and laid down. The latter produces the more immediate effect, though it is by much the more expensive, and, in the end, the turf is inferior, from its usually containing a mixture of unsuitable grasses and broad-leaved plants. The grass seeds will produce a close verdant surface in about three months, and, in a year, a much finer lawn than turf brought from common pasture, or meadow, or an old grass field. The flagstones or slates should be laid on brick piers, built on a solid foundation; so that their surface may be at all times level and even at the joints, for walking on. The surface of paved walks, like that of all others, as far as it is practicable, should be rather higher than the adjoining surfaces: otherwise, in heavy rains, they become receptacles for water, which, being often muddy, disfigures the stones, the pavement, or the gravel: but on this subject we shall enter more at length, when treating of walks, in a future page. If the shrub planted in the centre of the front garden be one of the more rare kinds, the natural loam, which we have supposed to be the soil in both gardens, may require to be mixed with a little sand, peat earth, or vegetable mould, to lighten and enrich it. The kinds of grass-seeds proper for sowing the lawn, and the mode of procedure, &c., will be given in a future page.

96. *The expense of carrying into execution* this manner of laying out and planting a suburban garden will depend chiefly on the price of flagstone or paving slate. In London, this, taking a quantity of the material together, would be from 4*d.* to 6*d.* a foot; so that every foot in length, of a walk 3 ft. broad, would cost from 1*s.* to 1*s.* 6*d.*, independently of the expense of building the piers by which the flagstones are to be supported. The whole expense of making these walks will be about three times that of walks laid with gravel:

but the saving of expense in after-keeping will be so very great, that no one who can afford the first cost will ever consider that as a reason for not having them. If preferred, the walks may, however, be of gravel or asphalte; directions for making which will be given hereinafter. The trees will cost 2*s.* 6*d.* each, and the grass seeds for both gardens 2*s.* 6*d.* The whole expense of laying out and planting, including the paving, may be between 20*l.* and 30*l.*

97. *The expense of keeping a garden so laid out and planted,* even if it were 200 ft. long and 50 ft. wide, would not cost, in the neighbourhood of London, 20*s.* a year; and yet it would at all times look neat. The ivy would grow up against the walls, and cling to them, without any expense of nailing or pruning, except when it infringed too much on the lawn in the front garden, or on the walk in the back garden, which it would not do for ten or twelve years, but it might require to be trimmed a little at the roots once a year. In consequence of there being no box or other planted edgings, there would be no expense of keeping them in order, and occasionally renewing them; and the margin of the lawn would only require to be prevented from spreading over the flagstones, by clipping the grass with a pair of shears every time the surface was mown. Neither the trees, nor the shrubs in the front garden, would need any pruning whatever for ten or twelve years, except the cutting out of such dead wood as might appear among the branches. We do not say that the fruit-trees would not be improved by pruning, but merely that, as far as neatness of appearance is concerned, it would be quite unnecessary. The walks would be cleaned by every shower of rain, and would not even require sweeping, except when the edges of the grass were clipped. The sole expense would thus be that of mowing the lawns and clipping their edges, which might be done six or eight times in the course of the year, at 2*s.* or 2*s.* 6*d.* a time; or the occupier, or his servant, might cut the grass with Budding's mowing-machine, and the edges with a pair of small hedge shears.

98. *In planting a garden of this kind in a situation exposed to the smoke,* care should be taken to use only those kinds of trees and shrubs which will thrive in close situations, as there are some kinds of shrubs and trees which experience proves will thrive even in the midst of smoke. Thus, for the plot in front, we should recommend *Aúcuba* japónica as an evergreen, because this remarkable plant, though a native of Japan, endures the smoke of London better than any indigenous evergreen shrub whatever; and, as a deciduous shrub, the common purple lilac, which is both hardy and beautiful, and comes early into leaf. The trees in the back garden might be the double-blossomed and scarlet thorns, both of which will grow and look well for at least eight or ten years; the laburnum, the almond, the mulberry (which thrives admirably in the most smoky places), and the weeping or allsaints' cherry (which is one of the few flowering trees that prosper in the gardens of Lambeth Palace, though enveloped in the smoke of numerous houses and manufactories). Ivy, whether common, giant, or variegated, will thrive in the very heart of London. Grass will not live, and look well, in smoky situations, for any length of time; but, if the *Pòa ánnua* be used, it will ripen its seeds and sow itself every year; and it has this advantage, that during winter it is greener than any other grass that will grow in a town. Should it fail in any part, and leave bare patches, seeds may be procured

from the seed-shops, and, being sown at any season, will come up in a few days.

Design II.—*To lay out and plant the garden of a street house of larger size, but still in the simplest manner.*

99. *To lay out and plant a larger garden of the same kind*, and for the attainment of the same objects, all the difference would be, that, instead of one shrub in the front garden, there should be several; and, instead of one row of trees in the back garden, there should be two, or perhaps three; or, what would be much better, that the trees should be planted in quincunx, as shown in *fig.* 32., so as to give the appearance of breadth to the centre of the lawn, and to make the garden seem much larger than it really is. The walks would still be laid with flagstones, or some description of pavement; the walls would be planted with ivy; and the house would still be left without a vine, a fig, or a rose, trained against it. *Fig.* 32. is the plan of a suburban

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street residence, the house and front and back gardens of which occupy a space 60 ft. in width, by 200 ft. in length. Here the entrance walk (*a*) passes through the centre of the front garden, on each side of which there is a grass plot, with a large shrub in the centre, and smaller ones at each angle. There is a servants' entrance at one side at *b*, and a sunk area, both before and behind; that in front being narrow, and serving merely to keep the walls dry, while that behind is broad, and contains a larder, bottle-rack, and similar conveniences required for a house of the second rate. The back garden is planted with four rows of low trees, two near each walk, in quincunx, leaving a broad space in the middle, about 100 ft. in length, well adapted for a party walking backwards and forwards on in the summer season, for a dance, or for placing a tent on, for sitting under, at the farther end. A garden of this kind might be laid out and planted for 30*l.* or 40*l.*; and kept perfectly neat for 30*s.* or 40*s.* a year.

Design III. *To lay out and plant the gardens of a suburban villa, with regard to economy, but with some attention to ornament.*

100. *The situation of the house* in *fig.* 33. appears almost inconveniently near the street or road; but the house is so placed, in order to allow an appearance of ample space, and breadth of lawn, to be given to the grounds. In *fig.* 33., *a* is the entrance; *b*, the drawing-room, having a view the whole length of the lawn; *c* is the dining-room, having a very confined view, and, in short, looking across some bushes, to a screen of evergreens (say hollies or evergreen oaks); *d* is the breakfast-room, or common sitting-room of the family, looking on a flower-garden, to which there is a descent from a balcony

by three steps. The other small room may be used as a business, waiting, or gentleman's room; and the situation of the staircase is indicated. The

central hall is large for the size of the house, and may, in summer, be used occasionally as a music-room, or as a play-place, or dancing-room, for children. All the offices are on the basement story, and the first and second floors are bed-rooms. If circumstances are favourable, a small piece of water, supplied from a dripping rock, at *e*, would have a good effect; and there might be rock-work, or a statue; there might also be a statue on a pedestal, surrounded with tazza vases of flowers, in the centre of the flower-garden; or, if water were abundant, a fountain might be substituted for the statue. The rest of the garden, with the exception of the surrounding border between the walk and the boundary wall, is entirely of turf, varied by choice ornamental trees and shrubs, including some fruit-trees and fruit shrubs.

101. *Laying out.*—We shall suppose the piece of ground to be about 250 ft. in length, and 100 ft. in breadth, and that the ground has been properly levelled; the next point is to provide efficient drainage, as the part of the garden which is to be covered with grass will be of comparatively little use, unless it be thoroughly drained, so as to be in a fit state for walking upon nearly all the year. The levelling and draining having been completed, the next thing to be done is to mark out the situation of the walks; and these, as the main object is to have a broad expanse of lawn, are kept as near the boundary line as practicable. They may be made of gravel, or any other similar material, or laid with flagstones or asphalte, in the way that will be described under the head of Garden Operations. The flower garden may then be staked out, and turf laid over the whole of the centre of the back garden from *b* to *e*, a dug border being left at *h*, *i*, and *k*, if thought advisable; there might be also dug beds at *g* and *f*; and the border between the walls and the walks should be dug ground. The trees at *l*, *m*, *n*, *o*, and *p*, should, however, be all planted on the grass.

102. *The planting* of a garden of this kind must depend, in some measure, on the taste of the proprietor; but as economy is to be our object, the following forty-three kinds of trees and shrubs may be recommended for planting on the grass, as being at once both cheap and ornamental, either in their general appearance and the colour of their leaves, or in their flowers:

Amýgdalus commùnis, the common almond.
Bétula álba, the common birch.
Cércis Siliquástrum, the Judas tree.
Córnus sibérica, the coral-wooded dog-wood.
Cratægus Oxyacántha var., the double and scarlet-flowering hawthorns, and other species or varieties of *Cratæ'gus*.
Cydònia japónica (commonly called *Pỳrus japónica*).
Cytisus alpìnus, the Scotch laburnum.
Dáphne Mezèreum, the common mezereon.
Fàgus sylvática purpùrea, the purple beech.
Halèsia tetráptera, the snow-drop tree.
Hibíscus syriacus, the althæa frutex.
Hippóphae argéntea, the silver-leaved buck-thorn.
Hypéricum Kalmiànum, Kalm's St. John's wort.
Ilex Aquifòlium, the common holly.
Laúrus nóbilis, the sweet bay.
Ligústrum vulgàre, the common privet.
Philadélphus coronàrius, the common garden syringa, and many other kinds.
Phillýrea angustifòlia, the narrow-leaved phillyrea.
Pỳrus aucupària, the mountain ash.
Pỳrus baccàta, the Siberian crab.
Pỳrus coronària, the garland-flowered crab.
Pỳrus Astracánica, the transparent crab.
Pỳrus spectábilis, the showy-flowered crab.
Quércus Cérris, the Turkey oak.
Quércus Ilex, the common evergreen oak.
Rhús Cótinus, the periwig tree.
Rhús élegans, the stag's-horn sumach.
Ribes aúreum, the yellow-flowered currant.
Robínia viscòsa and híspida, the glutinous and rose-flowered acacias.
Sàlix amygdálina, the almond-leaved willow.
Sophòra japónica, the Japan sophora and the weeping variety.
Spártium júnceum, the Spanish broom.
Spártium multiflòrum, the white broom.
Spiræ'a hypericifòlia and *salicifòlia*, the hypericum-leaved and the willow-leaved spiræas, and other kinds.
Symphòria racemòsa, the snowberry tree.
Thùja occidentàlis, the arbor vitæ.
Vibúrnum O'pulus, the snowball tree.
U'lex europæ'a plèna, the double-blossomed furze.
Xylósteum Tatáricum, the tartarian honey-suckle.

These will all bear the London smoke, and, with the exception of the sweet bay, are quite hardy. If forty sorts in mixture were ordered from a nurseryman, they would cost 9s. per dozen; but, if the above list were given to the same nurseryman, he could not afford them for less than 1s. each on an average, though the sorts named are in all the nurseries.

103. *To vary this mode of planting*, in some places, such as at *l* and *n*, there may be planted groups of Mahònia Aquifòlium; and at *o* may be a group consisting of laurestinus and arbutus, and also Portugal laurel, if the situation be not too near the smoke of London for the latter tree. At *p* may be some variegated hollies; and a few choice ornamental shrubs may be introduced in various places on the margin of the clumps next the grass. At *q* may be a Deodar cedar, which will grow freely near London; and in some other situations, as a single tree, may be introduced an Araucària imbricàta, or a Paulównia imperiàlis, or a mulberry may be planted. Great care is, however, required in planting single trees, that they may not destroy the effect of breadth intended to be produced in the centre of the lawn, and that they may not interfere with the openings left among the clumps, and which are intended to produce the effect of glades and vistas, and to give the idea of the place being much more extensive than it really is.

104. *To form an evergreen screen* to hide the boundary wall from the windows of the dining-room, at *s*, may be planted one of the beautiful Chinese cypress (Juníperus sinénsis); and beyond this may be a shrubbery of choice dwarf junipers, and other similar plants, which may be mixed with hollies, and dwarf evergreen oaks, or any other plants that may be preferred, so as to have an agreeable effect, and yet hide the boundary from the windows of

the dining-room *c*; the only care necessary being to mingle a few variegated hollies or flowering shrubs with the other trees, to prevent the plantation from looking too dark. If desired, the plantation may be made to slope upwards from the house to the walk, next which the highest bushes may be placed, and which would be thus hidden from the house. Another mode of managing this screen would be to carry the walk next the house instead of being in its present position, and to have a plantation of American shrubs carried from it to the boundary wall; the kalmias, azaleas, and other low-growing plants being in front, and the rhododendrons behind. There may also be a plantation of rhododendrons and other American plants at *r*, and laurestinus and rhododendrons may form the shrubbery between the house and the road.

105. *The flower garden*, *t*, may be planted with Californian annuals, which will be in flower from March till the end of May, when they may be removed and their place supplied by green-house plants, which will continue in flower till October or November. The Californian annuals should be sown the latter end of October or the beginning of November, as soon as the green-house plants are removed and the ground has been cleared and raked. The following is a list of the annuals which may be sown to stand the winter, in order that they may flower in early spring:

1. Nemóphila insígnis; blue.
2. Eschschóltzia crócea; orange.
3. Leptosìphon densiflòrus; purple.
4. Clárkia pulchélla álba; white.
5. Eschschóltzia Califórnica; yellow.
6. Lupìnus nànus; blue.
7. Nemóphila atomària; white.
8. Erýsimum Perowskiànum; orange.

Towards the end of May these should be cleared away entirely, and the ground forked over and raked, after which the beds may be filled with green-house plants as follows:

1. Calceolarias; yellow.
2. Verbenas; scarlet.
3. Lobelias; blue.
4. Calceolarias; yellow.
5. Verbenas; white.
6. Phlóx Drummóndii; crimson.
7. Anagállis Monélli; blue.
8. Pelargònium Tom Thumb; scarlet.

The best yellow calceolarias are C. Kèyii, and C. viscosíssima, which may be obtained at 8d. or 9d. each, or at 6s. 9d. or 7s. a dozen. If preferred, Cùphea platycéntra, which may be had for 4s. a dozen, may be substituted for calceolarias in the bed marked 4; and Heliotròpium Voltaireànum for the anagallis, as the heliotrope is a most splendid plant, and its flowers, which are produced in large trusses, are of a brilliant dark purple. For border flowers this heliotrope, Calceolària amplexicaúlis, Zauschnèria Califórnica, or Z. coccínea, and Diélytra spectábilis may be planted, but the last two are more expensive than the others.

106. *Planting the walls.*—The side walls near the house should be completely covered, in order to disguise the boundary; and for this purpose we would recommend ornamental climbers and creepers, or planting the whole with ivy. If climbers are chosen, the sorts which may be procured at 1*s.* or 1*s.* 6*d.* a plant are:

Ampelópsis quinquefòlia and cordàta, the five-leaved and heart-leaved Virginian creeper.

Atrágene austrìaca, the Austrian virgin's bower.

Técoma (Bignònia) radìcans, the common trumpet flower.

Clématis montàna, flórida, azùrea, Viórna, and Viticélla, different kinds of virgin's bower.

Wistàr*ia* sinénsis, the Chinese wistaria.

*Jas*mìnum officinàle, common jasmine, of which there may be several plants, as they will grow freely, and will bear the smoke

*Lon*ícer*a* flàva, japónica, flexuòsa, gràta, impléxa, pubéscens, and sempervìrens; all different kinds of honeysuckle.

*Ly*cium bárbarum and ruthénicum, the Duke of Argyll's tea-tree.

*Rù*bus fruticòsus flòre plèno, and fòliis laciniàtis, the double-flowered and cut-leaved brambles; or *R.* nutkànus and *R.* spectábilis, the American raspberry.

*Rò*sa Bánks*iæ*, white and yellow; Boursaúlt*ii*, Grevíllei, índica màjor, multiflòra repánda, Rùga, and Noisette: which may be obtained at 1*s.* each; but of which only Boursaúltii and Rùga will bear the smoke well, though Grevíllei will bear it for some years.

107. *As the roses would require some preparation of the soil*, unless it were naturally dry and good, they might be planted at the farther end of the garden, in the border which is 2 ft. wide, and in the narrow border which is formed between the walk and the sunk area, both these borders being previously prepared with rich soil; or, if the atmosphere should be too smoky for roses, this last border may be planted with common and variegated ivy, which would cluster over the area wall, and have a lively verdant appearance at every period of the year. Common ivy may be obtained at 3*s.* per dozen, or 4*d.* a single plant; and the variegated ivy is 1*s.* 6*d.* a plant.

108. Another mode of planting this garden would be, to have only standard roses, and fruit shrubs, such as gooseberries, currants, raspberries, vacciniums, &c., of which there cannot be more than two or three plants of each kind, standing in small circles, kept dug and manured, in order that they may produce their flowers and fruit of good size; and a few mulberry, quince, medlar, apple, pear, and plum-trees, standing on the grass. Against the wall may be planted one or two peaches, nectarines, and apricots; and against the house, a fig-tree and a vine. The remainder of the walls and of the house may be varied by roses and flowering creepers; except the more shady parts of the surrounding wall, which may be covered with the common, the giant, and the variegated ivy. The surrounding border between the walk and the boundary wall may be wholly devoted to bulbs, in spring and the beginning of summer; with a row of Russian violets inside the box, for producing fragrance in winter; and patches of mignonette at regular distances, to scent the air during summer. Among the groups of trees, and close by their roots, common cowslips, snow-drops, wild violets, and wood anemones may be planted, to come up among the grass; and, being only planted in a few places, and these near the roots of the trees, they may be easily avoided by the mower. In such a garden as this, a very great variety of trees and shrubs might be grown; and the flower-garden is sufficiently large to produce a very good display of the finer kinds of flowers.

109. *A few pot-herbs* might be planted in the space marked *u*, or in any other secluded place where they would be conveniently situated with regard to the kitchen, and yet not be in sight of the windows of the house.

110. *Management.*—Notwithstanding the extent and beauty of this place, there would not be much expense in the management, as there is very little dug ground; and if the walls were covered with ivy, or climbing plants, they would want very little pruning and training. With regard to the grass, it should be mown once a fortnight during the growing season, and once a month during the rest of the year, for the first two or three years; but if it were kept from growing by being frequently mown, the roots would soon

become so weakened, that in three or four years they would not require mowing above five or six times in the course of the year. It is a great mistake to suppose that anything is gained in the end, in the way of economy, by suffering the grass of lawns to grow long before mowing, in order to save the expense of once or twice mowing during the season; for, in proportion as the grass is allowed to grow long, in the same proportion are the roots strengthened, and enabled to send up still longer leaves and stems; whereas, if a lawn were kept short by frequent mowing for two or three years in succession, the plants of grass would at last become so weak that not one half the mowing usually required for slovenly-kept lawns would be necessary, and the turf would be much finer and neater in appearance. The trees, being planted with a view to picturesque effect, would require very little attention of any kind for a number of years, more especially if the soil were dry and not too rich. Even the flower-garden would be managed with very little cost.

§2. *Suburban gardens, in which profit is the principal object in view.*

Design IV. *To lay out and plant the garden of a street-house, where the principal object is the culture of fruit and vegetables.*

111. *General arrangements.*—The mode of laying out and planting a suburban garden, entered through the house, where the object is to save expense to the occupier, by raising vegetables to be consumed in his family, differs considerably from those recommended where the object is economy in the first cost, or economy in the after-management. It may be necessary to premise, that, by profit, we do not here allude to the sale of articles, but simply to the production of such fruit and vegetables as shall be most useful in the household economy of the occupier. We shall suppose the extent of the back garden of *fig.* 34. to be nearly the same as in *fig.* 31.; because the

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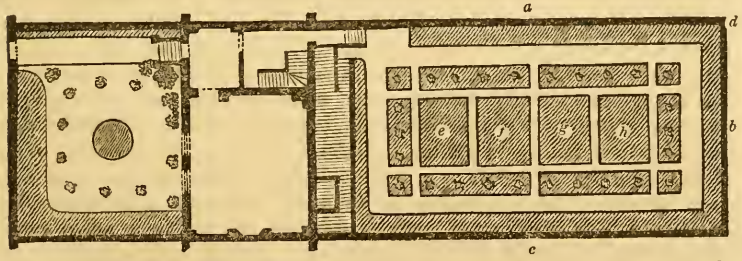

same directions are alike applicable to both, or to any other garden similarly circumstanced. We shall also suppose that the drainage, levelling, service pipes, &c., and also the walks, are completed, and the front garden sloped, as advised in § 78.; and the ground trenched, improved if necessary, and thoroughly manured. In addition, there ought to be a manure tank formed, and so connected with the privy and the sink of the back kitchen, as to receive the drainage from them. To this there ought either to be a fixed pump, or a moveable cover, to admit of readily dipping a bucket into the tank If a pump be employed, it ought to be one of large bore, so as to bring up mud as well as water. In using this liquid manure, great care must be taken never to put it on the leaves of the plants, and either to follow it by watering

with clear water, so as to prevent the surface of the soil from being disfigured; or, what is preferable, to use it chiefly during or immediately before rain. As the supply of liquid manure will be regular throughout the year, it ought to be regularly used; and at those seasons when it may not be proper to water annual herbaceous vegetables with it, on account of disfiguring or dirtying their leaves, it may be applied to perennials, such as tart rhubarb and sea-kale, and to the roots of fruit-trees and fruit shrubs. The liquid manure from a house, where the family consists of five or six persons, and where they wash at home, if used as it is produced, so as to allow none of it to run off by the drain, will be quite sufficient for a garden 200 ft. in length and 60 ft. in breadth. Liquid manure, however, though powerful in a recent state, is always more efficacious after being a week or two fermented; but for this purpose two tanks are necessary, as will be hereafter described, when treating of the arrangements suitable for large gardens. All the laying out being completed, we next proceed to the planting.

112. *The front garden* we would devote chiefly to ornamental flowers or plants, some of which should be, at the same time, useful in cookery. The general surface we would keep in turf, forming round it a narrow dug border, and, in the centre, a bed in the form of a circle, square, diamond, or any other regular figure. In these borders, and in the central bed, we would plant no trees or shrubs, but only such ornamental herbaceous plants as could be rendered useful in the kitchen: for example, in the centre bed we would plant a Judas tree, the flowers of which make excellent fritters when fried in batter; or a mulberry; and in the alternate beds of a circular shape round it, we would plant an eatable gourd, or vegetable marrow, the fruit of which is one of the most useful of summer vegetables, either boiled or fried, and serves either to mix with apples, or to use alone, flavoured with lemon and sugar, for fruit pies. The best kind of gourd for using, when young, is the vegetable marrow. In the other beds we would plant a mammoth gourd, or American butter-squash pumpkin, the fruit of which should be allowed to ripen, for the purpose of being used for soups and pies, and also as a vegetable, when boiled, in the winter time. The fruit of both these species, when the plants are regularly watered every warm evening with diluted liquid manure, or even with simple water, will sometimes attain an enormous size, weighing from 100 lbs. to 200 lbs.; and, as it will keep the greater part of the winter, even though cut, it is a most valuable resource for soups, and is so used in some of the first families in England. When cut, a circular orifice, of about 4 in. in diameter, is made on one side, and the piece taken out is, after cutting off part of the flesh, preserved as a stopper to exclude the air. When a piece is wanted for soups or pies, the stopper is taken out, and a sufficient quantity scooped out of the inside with a knife or an iron spoon. This may be practised throughout the whole winter, and the fruit will still continue quite fresh. The mammoth gourd is much used in soups by the French, even of the humblest class, and in the public hospitals, as well as by the Italians and the Americans; and though in England it is as yet scarcely known, except at the tables of the nobility and gentry, it is well deserving of general cultivation. It gives a fine flavour and creamy richness to soup, and is very nutritious. The flowers of all the gourds and pumpkins are delicious fried in butter; and the points of the young shoots, boiled, are equal to spinach in tenderness and in flavour.

113. *In the border next the house,* in order to be trained against it, if facing the south, we would plant a vine or a fig; and, if it faced the east or the west, a Glout Morceau pear, which is a never-failing bearer, of excellent flavour, and a good keeper. If the front faced the north, we should not recommend any tree or shrub to be trained against the house, unless it were ivy, which keeps the house warm, excludes rain, and always looks well. As ornamental flowers in this border, and also in those of the two side walls, we would plant scarlet runners, which would give a length of 70 ft. of this vegetable, and would afford an ample supply for a family of six or seven persons during the whole summer. For the runners to twine on, pieces of packthread should be nailed to the walls, and to the house, at about 6 in. apart, and reaching from within 1 ft. of the ground to from 4 ft. to 6 ft. above it, as may be suitable to the height of the side walls. The lower ends of the strings are fastened to a horizontal rod supported by props at about 6 in. from the wall. The kidney beans, being sown between the wall and the rod, will attach themselves, as soon as they come up, to the strings, and continue to twine round these till they have reached the top, flowering and fruiting as they advance. As the nails in the side wall next the path might be liable to catch the dress of ladies passing near them, instead of nails, a rod or a wire might be fixed there: and, indeed, the most elegant mode of training kidney-beans against a wall is, to have an iron wire of the fourth of an inch in diameter, fixed horizontally on studs let into the wall both at top and at bottom, and painted green, and to stretch the threads on these wires from the one to the other. Every April, when the kidney-beans are planted, a person taking a ball of twine, and beginning at one end, by passing it over and under the bars at 6 in. distance, would soon complete this string trellis, the lines of the strings not being perpendicular, but in a diagonal direction. By going over the space a second time, and crossing these lines, the effect would be improved, and the support for the twining stems of the runners increased. If thought necessary, a slight wire fence might be placed along the walk, to protect the grass plot from dogs,. and, on this also, scarlet runners might be grown; or an arched wire trellis, from the street entrance to the door of the house, might be formed over the walk, and gourds and scarlet runners might be trained on it. In the border on the fourth, or street side of the front garden, we would sow nasturtiums, which would soon grow up against the dwarf wall and the railing, and also spread over the grass. Their flowers would make a fine appearance all summer, and, with the young leaves and the tender points of the shoots, might be used in salading; while the fruit, if gathered before it becomes too old, is well known to make an excellent substitute for capers. In the side borders containing the scarlet runners nothing else should be planted, unless it were a vine for the purpose of training its shoots along the tops of the walls; because these borders will require to be dug and manured every year, and the soil renewed every three or four years; and because no flowering shrub could thrive under the smothering influence of the foliage of the runners. The same may be observed of the border containing the nasturtiums. The only culture required for both the nasturtiums and the scarlet runners, in the summer time, in addition to the usual routine of watering, weeding, and keeping down insects, &c., would be, when any of the plants began to cease bearing, to cut them down, and water freely at their roots, in consequence of which treatment they will send up fresh shoots,

and bear a second crop. In mild winters, the roots of the runners, if the soil is dry, sometimes survive, and spring up again the following year; and, in this case, fresh seeds are unnecessary, but the ground must either be manured during winter, or frequently watered with liquid manure whilst the plants are growing. The kidney-bean is one of the most valuable of culinary vegetables, being always ready to gather during the whole summer, and requiring very little cookery. That kind known as the scarlet runner is by far the most profitable that can be planted; not only from its producing a greater quantity of fruit than any of the dwarf varieties, but because its pods are tender to the latest period of their growth, even when the seeds within are full grown; whereas the pods of the dwarf varieties become stringy, hard, and unfit to eat, even before the seeds are half-grown. The mature seeds of all the varieties, taken from the pods, and well boiled or stewed, form a farinaceous and most nutritious food; the quantity of gluten in them being nearly as great as it is in the best wheat. Before Miller's time, the scarlet runner was chiefly cultivated for the beauty of its flowers, and on account of their being produced by the plants during the whole summer. The plants were regularly sown every spring in the flower border, among the other ornamental annuals, and the flowers were eagerly sought after by ladies to put into their nosegays and garlands; but Miller having brought the pods into general use for the table, the scarlet runner has disappeared from the flower border, and has now almost ceased to be considered as an ornamental plant. The round sabre bean, which is a profuse bearer, and the seeds of which are very nutritious when eaten in a ripe state, has white flowers, and is very ornamental when trained against a wall. Another kind of kidney-bean has black and white flowers, and is still more ornamental than the others.

114. *The bed on the grass plot* adjoining the walk between the entrance-gate and the front door may be planted or sown with such plants as are at once fragrant flowers and sweet herbs; such as lemon and common thyme, mint, marjoram, sage, winter savory, fennel, and tarragon. These would never require any manure, and need not to be taken up and replanted oftener than once in three or four years, or even longer.

115. *In gardens of smaller size*, if it should be desired to confine the culture of useful plants to the back garden, the front garden may be laid down in grass, and only dwarf fruit-trees planted in it. The centre tree may be a filbert or a berberrry. The filbert is most ornamental during winter, with its long male catkins moved by every wind; but the berberry has the advantage of being beautiful, not only when in flower in spring, but also in autumn when covered with its bright fruit, which is useful both for garnishing and making a delicious preserve. In this case gooseberry or currant bushes may be planted in the circles, or the centre-tree may be a swan-egg pear, which is very graceful in its habit of growth, and the bushes in the circles may be dwarf apples on paradise stocks, and the kinds may be the Hawthornden, if profit be the object, because no other apple-tree bears so abundantly as a dwarf; but, for ornament, may be added, the Alexander, a very large apple; the red Siberian crab, nearly as small as a cherry, but an excellent bearer, and making an elegant sweetmeat when preserved in apple jelly; and the transparent crab, a most beautiful apple with a skin like transparent wax, also an abundant bearer, and good for preserving. Other fruit-trees are either not ornamental, such as the pear and medlar; or of too short duration,

such as the cherry, which never looks well after the month of July, or the plum, which ripens its fruit in August. The quince is one of the most ornamental of fruit-trees, and might be used for the centre bed, but unfortunately it is rather an uncertain bearer.

116. *The back garden.*—If the back garden lies in the direction of east and west, then the wall, having a southern exposure, may be planted with peaches, nectarines, and apricots. The wall facing the east or west might be planted with baking plums and cherries, and the wall with an aspect to the north with morello cherries and currants, or with baking apples and pears, including some of the earliest sorts, and some of the latest. If the back garden lies in the direction of north and south, then the only wall having a southern exposure will be one of the end walls, and on this grapes or peaches may be planted; while the two side walls may be covered with pears, apples, plums, and cherries, with a gooseberry or a currant between each, to be removed as soon as the fruit-trees require more room. We recommend only kitchen fruits, as being the most profitable for pies, puddings, &c., to a family; but some table fruits may be introduced, if the occupier prefers them. A vine may be trained against the house.

117. *Selection of fruit-trees.*—As the object in view in planting this garden is rather to produce the fruits most useful in a family, than to grow a great variety of sorts, the first point is to consider what kinds are best adapted for the kitchen. Of these apples are the most wholesome for children, and are not only useful for pies and puddings, but excellent roasted, or boiled down with honey, so as to make a kind of sweetmeat, resembling that called by the French resiné, to eat instead of butter with bread. Pears, when of the melting kinds, are both very agreeable and very wholesome to eat raw; but they are seldom used in England for any purposes of cookery except stewing; and this dish, when made palatable, is generally too rich for children. Of stone fruits, damsons are the most wholesome, and most easily preserved; and morello and Kentish are the best cherries for cooking. Gooseberries, raspberries, and red currants, with a few black ones, are also extremely useful for all purposes of cookery, particularly preserving. One of the most useful apples for the kitchen is the Hawthornden, which comes in early, bears abundantly, and falls (softens) well in boiling; but the fruit does not keep, and, in some soils, the tree dies off at an early age. The Keswick codlin is also a good and early kitchen apple. The Ribston pippin is an excellent fruit, either for the kitchen or dessert; but the tree is not quite so hardy or so good a bearer as either the Bedfordshire foundling (a very large apple), or the king of the pippins. The Brabant bellefleur and Wormsley pippin are also very excellent apples. The best keeping apples for winter use are the northern greening and the French crab, the latter of which will keep two years. For pears, the best for the table are the beurré de Ranz, the glout morceau, and Eyewood, all excellent bearers, and all keep well. The earliest of the fine-flavoured pears is the jargonelle; but it will not keep longer than a week or ten days. Marie Louise is next in ripening to the jargonelle, but it also will not keep long. The best pear for keeping is the Easter beurré. The best cherries for the kitchen are the Kentish or Flemish, for the early crops, on account of their juiciness, and the smallness of their stones; and, in the autumn, the morello, for making cherry brandy and preserving. The wild, or black cherry, which ripens between the kinds mentioned, is a very rich fruit for

pies or puddings; but the stones are large in proportion to the pulp, and it continues in season but a very short time. Of plums, the green gage, the early and late Orleans, and the Shropshire or prune damson, are the best. The wine sour and mirabelle are also frequently used for preserving; and Gisborne's plum is an extraordinary bearer. Of grapes, the most productive, in the open air, are the esperione and the white muscadine; the best for wine-making is the black cluster. Of peaches, the best bearers are the grosse mignonne, the Royal George, and the Bellegarde; the last a most excellent sort. The best nectarine is the Elruge, and the best apricot for the table is the Moorpark; though the Breda, which is a very abundant bearer, is most useful in the kitchen, as it not only makes a delicious preserve when ripe, but excellent tarts when green. The best bearing fig is the large blue or purple fig, which ripens well in the open air, and early; but the brown Brunswick is also much recommended. The best gooseberries for preserving green, and making green gooseberry wine, or British champagne, are the rumbullion and the white Dutch. The Warrington, the whitesmith, and the early rough red are great bearers, and afford excellent fruit for the table, and for preserving when ripe: the roaring lion is the best bearer of the large sorts. The common, or Dutch, red currant is the only one used for pies and puddings, and is the best for preserving. The black currant is used for making a kind of jam, called rob, which is thought good for sore throats; the black Naples produces the finest fruit. The best white currant is the white Dutch. The red Antwerp raspberry is the best, both for the table and preserving; and the white Antwerp has the finest flavour for the dessert. The only strawberry that is suitable for preserving is Keen's seedling, and it is also the best and most regular bearer. The red alpine is high-flavoured, and continues in bearing many months, but the fruit is small. The scarlets are the kinds mostly used for flavouring ices, and the variety called the Duke of Kent's scarlet is esteemed the best. The old pine is the finest flavoured of all the strawberries, but it is a very uncertain bearer.

118. *Walks and borders.*—On the supposition that the walks are of flagstone, supported on brick piers, then the wall borders need not be more than 18 in. wide; as the space under the flagstones (the latter not touching the soil) will be almost as available for a border for the roots of the wall trees, as if it were fully exposed to the sun; while, in effect, as we have elsewhere observed, it adds all the space occupied by the walks to the superficial area of the garden. If the walks are of gravel, then the width of the borders between them and the wall on which peaches and grapes are to be grown ought not to be less than 5 ft.; and those for the other hardier fruits not less than 2 or 3 feet. In *fig.* 34., the direction of the side walls of the back garden is east and west: and, the walks being supposed to be of gravel, the border to the wall *a*, having a south aspect, is 5 ft. wide; that to the end wall *b*, having a west aspect, is 3 ft. wide; and that to the south wall *c*, having a north aspect, is 2 ft. wide; *d* is the rubbish-pit. The interior of the garden is laid out in beds for the cultivation of kitchen crops.

119. *Planting the central plot of the back garden.*—The object being to grow culinary vegetables in it, on no account would we recommend standard fruit-trees to be planted there; because the shade of them is injurious to the flavour of the vegetables grown beneath them; and because the trenching and digging of the ground necessary to bring the vegetables to a large size,

and succulent texture, is highly injurious to the fruit-trees; by preventing them from ever being able to send up their roots to the surface, so as to enjoy the warmth of the sun, and the vivifying influence of the air. Hence it is that we so seldom see abundant crops on fruit-trees growing as standards among culinary vegetables, and so frequently find the trees cankered. The want of crop arises from the roots getting down out of the reach of the air; and thus being deprived of a proper supply of food, as they derive a great portion of their carbon from the air. If the garden be sufficiently large to spare room for fruit-trees in the middle bed, then the best mode of growing them is on espaliers; because, when so treated, being kept low, and within definite bounds, they produce no injurious shade; and, by planting them in a border by themselves, and only stirring the soil of that border with a pronged fork, and never farther than 2 or 3 inches deep, a sufficient number of the fibrous roots will establish themselves closely under the surface, to derive all the benefit that is necessary for them from the sun and air. It may be useful to observe here, that, though it is always an advantage to fruit-trees to have a space around them undug, to the same extent as that which is covered by their branches, yet that they will produce crops of fruit with less than that space; provided what space there is be fully exposed to the sun, and either kept constantly mulched with rotten manure, or stirred two or three times during the summer to the depth of 2 or 3 inches, and kept quite loose on the surface. Experience proves this; and hence, it would appear that a few roots, favourably circumstanced in regard to the atmosphere, are sufficient to take in as much air as will supply the whole plant, in the same manner as a few roots in contact with water will supply the whole plant with moisture.

120. *The kinds of culinary vegetables* which should be planted in a small garden, where profit is the object in view, must depend on its extent. If that is such as to admit of growing all the vegetables likely to be used by the family, except winter potatoes, then all that is necessary is, to determine the proportion of space that shall be allotted to the fixed or perennial crops: and that which shall be set aside for the movable or annual crops: but if, on the other hand, there is not space enough for growing all the vegetables required by the family, then the point is to determine which sorts ought to be cultivated in preference. On the supposition that there is space enough for growing all the vegetables required, and that the family use asparagus, sea-kale, tart rhubarb, and artichokes, then we would allot a sixth part for the smaller fruits, such as gooseberries, raspberries, strawberries, &c., leaving two-thirds for the annual crops. Dividing these two-thirds into 25 parts, we would dispose of them as follows:

The cabbage tribe, including Savoys, Brussels sprouts, cauliflowers, broccoli, borecole, &c.	6
Leguminous plants, including peas, beans, and kidney-beans	8
Roots, including turnips, carrots, parsneps, beet, and early potatoes (but not a main crop of potatoes for winter use)	6
Leafy plants, such as common spinach, white beet, and New Zealand spinach	1
Bulbous plants, including onions, leeks, chives, garlick, shalots, &c.	1½
Salad plants, including lettuce, endive, chicory, celery, mustard and cress, radish, &c.	2
Pot and sweet herbs; thyme, sage, chamomile, &c.	¼
The gourd tribe	¼
	25

The foregoing is given as an approximation to the usual space occupied by these crops in gentlemen's gardens; but, as most families have some particular vegetable for which they have a preference, the space for that kind may be enlarged, and that allotted to some other, for which they care little, diminished. In case, however, the reader may wish to have positive rules laid down, we may suggest that *e* may be planted with peas and beans, *f* with carrots and turnips, *g* with onions, and *h* with cabbages; the little circles may be gooseberry and currant bushes, and in the border below there may be planted strawberries, or spinach or other leafy plants, or salad plants. If strawberries are planted in the centre, then the spinach and salad plants may be planted in the borders under the walls.

121. *The system of the succession of crops* in kitchen-gardens (which is as necessary to be understood as the extent to be allowed to each crop) would take too much space to be discussed here; but it may be useful to state that, as far as possible, plants of the same natural order, and especially of the same genus, should never follow each other in direct succession; nor should taprooted plants follow each other in succession, even though of different orders: for example, peas should never follow beans, or kidney-beans, or the contrary; and carrots should never follow beet. Notwithstanding the soundness of these principles, they require to be taken in connexion with another principle, no less important; viz., that of expediency. Thus, it frequently happens, from the lateness of the season, that a crop is longer than usual before it is ready to be removed from the ground; or, from the dryness and warmth of the summer, that a crop is removed sooner than usual. When the summer crop is not all removed at the proper time, the winter crop (such as spinach, for example, after a crop of cabbages) might be endangered, if sowing it were delayed; and, therefore, some ground which is empty, though according to the plan of succession laid down it should have been cropped with something else, must be used for the spinach. When, on the contrary, the crop is ripe, and the ground cleared before the expected time, as it is never desirable to see ground without a growing crop, one may be made to follow, for the sake of covering the surface, that did not enter into the regular course of succession. The grand secret of getting the greatest quantity of culinary vegetables from any given surface of ground is, to have one crop coming forward in the same bed, or compartment, to be ready to succeed that which is about to be removed: and, for this purpose, it is always desirable to grow the crops in drills; a mode which is also attended with several other advantages, as will be hereafter explained.

122. *On the supposition that only a part of the vegetables consumed by the family can be grown in the back garden*, the next point is to determine those which it is advisable to grow. This depends on various considerations; such as those kinds in which the occupier is most curious in his taste; those which the soil and aspect are best calculated for producing; those which are dearest in the given locality, &c.: but the most general and influential consideration is, the keeping or non-keeping properties of culinary vegetables, after being gathered. All vegetables exposed for sale in markets or shops must necessarily have been gathered some time, and, consequently, deprived of their natural succulency, or even injured by fermentation; and this will be the case, more or less, according to the nature of the vegetable, and the mode in which it is brought to market by the grower, and kept by the seller. For

example, lettuces, peas, and spinach are brought to market in cart-loads, in large baskets, or in sacks; and, if the distance is great, or the time between gathering and consumption is more than a day, or, at most, two days, fermentation will have taken place. Cabbages and turnips are also brought to market in cart-loads; but though, when in a young state, with all their leaves about them, these vegetables ferment in the course of two or three days, yet, when they are full-grown and firm, they may, when deprived of their outer leaves, be kept in heaps for a week or more without undergoing fermentation. The vegetables which are most injured by keeping are such as are eaten raw; and hence it is always desirable, if possible, for every man to grow his own salading, such as lettuce, endive, cress, mustard, radishes, young onions, &c., in order that they may be brought to table fresh, and newly gathered. These ought, therefore, to be grown, if possible, in even the smallest back garden of a suburban residence. The excellence of celery also depends much upon its being eaten crisp and fresh from the ground; and, therefore, if room can be found, this also ought to be grown in small gardens. Next to salading, it has been found from experience that peas are most injured by being kept after they are gathered, and, therefore, they are the second class of articles which should be grown in every suburban kitchen-garden if possible. Tender leaves, such as those of spinach and spring cabbages, are next liable to injury from the same causes; and, therefore, they ought also to be grown, if room can be found. A small bed can scarcely be more profitably employed than under winter spinach, which (the Flanders variety being chosen), in a rich loamy soil, not wet below, and in a sheltered situation, will continue growing almost all the winter, and afford occasional gatherings at that season, and an abundant supply for the table from April till August, care being taken to pick out the flower stems as soon as they begin to appear, and to water when the ground is dry.

123. *Those vegetables which it is convenient to have always at hand*, in case of an emergency, and which a cook may gather for herself, ought also to be planted. Thus, parsley, mint, fennel, thyme, and chives, ought to be in every suburban garden-plot, however small, as supplying garnishings and seasoning, which are constantly wanted; but no one would think of growing horseradish in a fourth-rate suburban garden where a gardener was not kept; because, however frequently it might be used, it requires considerable labour to dig it up; and, as it keeps perfectly well, it may be procured from the greengrocer's at any time, and kept till wanted in a cellar, or in the garden, covered with soil. Where there is room, an asparagus bed, if properly formed at first by deep trenching, thorough drainage, and an abundant supply of manure, is a very convenient luxury; since the heads are easily gathered when wanted, require little aid from cookery, and are generally considered a delicacy. Asparagus beds, to those who prefer the shoots green, and, consequently, do not cut them till they are two or three inches above the ground, do not require to be earthed-up every winter, and of course are less expensive in the management than those where the asparagus is eaten blanched, as this effect can only be produced by heaping up earth on the beds. A bed of sea-kale, though it will sooner afford a supply for the table than a bed of asparagus, yet requires more attention from the gardener, and fails sooner, and, therefore, is not so well adapted for a suburban garden where the saving of labour is an object. Tart rhubarb, if planted in a soil deeply trenched,

and well manured, occasions less trouble than any other perennial vegetable; and, if watered in dry weather, it will continue producing leaves the whole summer. In winter, the ground on which it stands ought to be well soaked with liquid manure. For pies and puddings, rhubarb stalks are preferred by many to either gooseberries or apples; and they are so easily gathered, so wholesome, and so well adapted for children, that no suburban kitchen-garden ought to be without its rhubarb bed.

124. *Selection of culinary vegetables best adapted for small suburban gardens.*—Of the cabbages, Knight's early dwarf, introduced in the year 1835, and the early Battersea, are the best kinds for the early crops; and the latter will be found suitable for the secondary summer, autumn, and even winter supply. In most cases these will be found sufficient, as late cabbages are seldom grown in suburban gardens; but, where they are thought desirable, the late sugar-loaf may be chosen. Red cabbages are useful for pickling and stewing in the Flemish manner. The kind usually cultivated is the Dutch red; but the dwarf red, which is not much known, is more delicate for the table. The dwarf Savoy is a very useful winter vegetable, as its flavour is improved by frost, if not too severe, and it will supply the table with greens from November till spring. Brussels sprouts are a delicious vegetable, and should, if possible, be raised from seed ripened in Flanders, as the plant is apt to degenerate in this country. Scotch greens, or German kale, are very useful winter vegetables, as, when the heart is removed, the stalk continues for some months to send out side shoots or sprouts. The cauliflower is rather a difficult vegetable to grow well, as it requires an exceedingly rich soil, and careful culture. To have it early, it must also be protected during winter; and, as it is a vegetable that is brought to market in very great perfection, not being much injured by keeping a few days, it is better to purchase it when wanted, rather than to attempt to grow it, unless there is abundance of room. Purple Cape broccoli is not liable to the same objection, as, if sown in May or June, it will produce a good crop from August till December, unless destroyed by frost.

Of the leguminous vegetables, the best kinds of peas for a small garden are the blue Prussian, the dwarf marrowfat, and the white Prussian, or poor man's profit; or the white rouncival and Knight's tall marrowfat, where tall-growing varieties are wanted. We would not recommend any early pea to be grown, as these are generally very inferior in flavour to the others; but, where one is thought desirable, the early Warwick is said to be the best. For a late pea, the late blue dwarf Spanish has been strongly recommended. For beans, where it is thought desirable to grow them, the early mazagan, and long pod are the most fruitful; but the broad and green Windsors are generally preferred for the table. We have already mentioned that the scarlet runner is the most profitable kidney-bean. For potatoes, the ash-leaved and Rufford kidneys are to be preferred for the first crop; but Shaw's early and the champion, though they are both very prolific, and are those generally grown for the London market, we can by no means recommend, either for their mealiness or their flavour. For turnips, the early white Dutch and the yellow Dutch may be chosen; but the Teltow, or French, is well worth cultivation, on account of its sweetness, and the richness it gives to soups. The Teltow is the smallest of all turnips, not having more leaves on it than a radish; and, when used, it should be only scraped, and not pared,

as a great deal of the flavour is in the rind. For carrots, the early horn is best for an early, and the Altringham, or Altrincham, for a late, crop. For parsneps, the Guernsey grows to a large size, and the Siam is particularly well flavoured. The dwarf red beet is the kind best grown in gardens. The Flanders spinach is greatly to be preferred to the common kind, and will be sufficient for a small garden; but, where there is room, the white beet and the New Zealand spinach may be grown, to afford variety and a crop in summer, when annual spinach runs too rapidly to seed. For onions, the early silver-skinned and the Deptford may be recommended. The Portugal and the Spanish are mild, and grow to a great size, but do not keep well. Of leeks, chives, garlic, and shallots, only one kind is in general cultivation. Of the plants used in salading, the best are the union cabbage, and the large Brighton Cos lettuce, the Batavian endive, the variegated chicory, the curled-leaved and broad-leaved Normandy cress, and the scarlet and white turnip radishes. The best celery is the Italian. The curled-leaved parsley is the handsomest for garnishing, and answers equally well with the common for all the purposes to which parsley is usually applied.

125. *As the greater part of culinary vegetables are raised from seed*, sown partly where they are to remain, and partly for transplanting, something requires to be said here on that subject. In our catalogue of culinary vegetables, we shall state under each kind the quantity of ground which a given quantity of seed will sow; and also the smallest quantities of such seeds which are generally ordered from the seed-shops; and we shall only here state that the larger seeds, such as peas, beans, and a few others, are purchased by the pint, and almost all the small seeds by the ounce. There are very few gardens to suburban houses in which half a pound or a pound of any seed is required; and of many articles, such as potherbs, parsley, celery, &c., half an ounce, or threepenceworth, is quite sufficient for a small garden. In general, it is always safe to order seeds in small quantities, because the chance is greater of getting them fresh.

126. *Management.*—A back garden, even if only 200 ft. in length, and 50 ft. in breadth, with a front garden forming a square of 50 ft., cropped in the manner we have described, would occupy one person from April to September, during a fourth part of his time, or at least two hours a day; and besides this time, when much watering was required to be done, or insects to be got rid of by collecting, he would need the assistance of the female part of the family. Where there is a steady man-servant, this is just the sort of garden that he could take care of, directions being given to him by his employer as to the quantity of particular crops, and the season of sowing or planting, on the supposition that he was not a reading gardener. If he were, and took an interest in having the garden in good order, and in raising large crops we would recommend him to be as little interfered with as possible; for every man likes to have something on which he prides himself, and, to keep up that pride, it is necessary that it should be as much as possible his own work.

127. *Expense.*—The first cost of laying out and planting a garden of the kind here described, will be about 30*l.*; and the annual expense afterwards, supposing a commercial gardener to be employed, will be, on an average, a day and a half per week throughout the year; an arrangement being made that this time shall be bestowed on the garden, according as it is wanted, and

not formally at stated intervals of once a week; because in some weeks two days will be necessary, while in others half a day will suffice. The expense will depend on the rate of wages paid per day, which, about London, being about 3*s.* 6*d.* (the gardener finding his own tools), will amount, with seeds, &c., to about 15*l.* a year. But the garden, if managed by a hired gardener, working in it only at stated intervals, cannot possibly be turned to so much account as if cultivated by the occupier, or his in-door servant; because, during the months of June, July, and August, there are operations which require to be attended to daily; such as the removal of insects, watering, &c.; and which, if deferred, as they must necessarily be if a hired gardener only be employed, will endanger the crops, and, at all events, deteriorate their value both in quantity and quality. We would not, therefore, recommend

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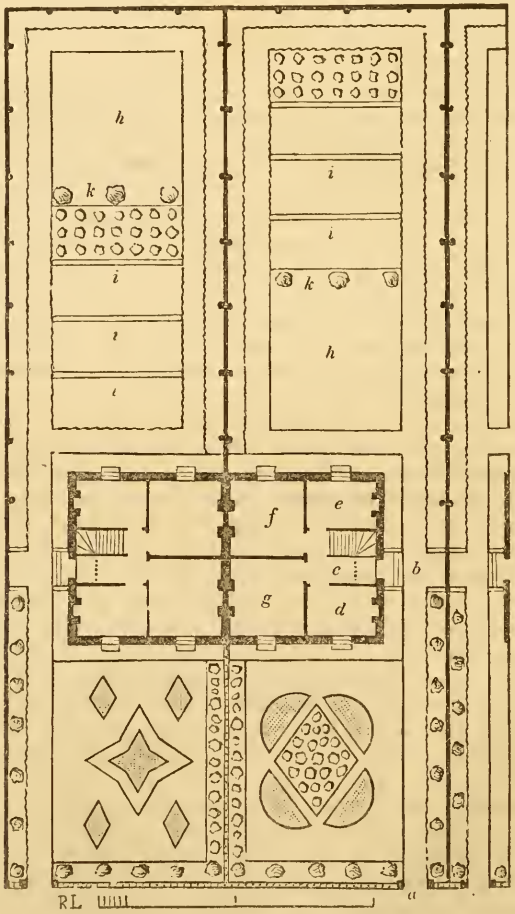

any one to cultivate his garden with a view to profit, unless he could do so with his own hands, or with those of a servant whom he was obliged to keep at any rate; because, assuredly, for the 15*l.* or 20*l.* a year which he must pay a hired gardener he might purchase as much fruit and vegetables as he could grow in a garden of the extent we have mentioned.

Design V.—*Two suburban villas, the gardens of which are laid out principally with a view to the culture of fruit trees and vegetables.*

128. *General arrangement.*—In *fig.* 35., *a* is the entrance from the street; *b*, the steps to the front door; *c*, the hall and staircase; *d*, a library or business-room; *e*, breakfast parlour, school-room, or bed-room; *f*, dining-room; and *g*, drawing-room. This house is supposed to be only two stories high; the upper story containing two best bed-rooms, a servant's bed-room, a nursery containing a bath, and a water-closet; and the basement floor containing a kitchen, back kitchen, and other offices, with a servants' water-closet. The entrance to each house is protected by a porch, which is extended as far as the boundary wall on each side; thus forming a low horizontal roof, which will contrast effectively with the higher roof of the house. Beneath each porch there is a bench for sitting on. Both houses are surrounded by a platform, or terrace of pavement, 3 ft. broad, and 9 in. higher than the surface of the walk, and which covers a vacuity all round the house as deep as the foundations; thereby keeping it perfectly dry. This platform also adds much to the dignity of the edifice, and forms a walk which is at all times firm, and comparatively dry and sheltered.

129. *The front gardens* are of turf, varied by flower-beds. That on the right has a rhomboidal figure in the centre, planted with gooseberries, with four semicircular beds round the central one, planted with strawberries. That on the left has a raised bed in the centre, with a border of turf, and four small diamond-shaped beds to harmonise with the rhomboidal bed in the right-hand garden. The centre bed may be filled with peat earth, and planted with *V*accínium madeirénse, or some other species of *V*accínium which bears fruit freely; and the diamond-shaped beds may be planted with the wood strawberry. The fruit of the common bilberry (*V*accínium Myrtíllus) arrives at maturity at the same time as that of the alpine, or wood, strawberry; and the two, when mixed together, and eaten with sugar and cream, are delightfully refreshing, as every one who has travelled in Poland or Sweden in the summer season must have experienced. In open, airy situations, the central bed might be planted with *R*ùbus árcticus, which is also a most delicious fruit, with a flavour resembling that of the raspberry, but far superior. If none of these fruits will thrive in the situation, or if peat soil to grow them in be thought too expensive, then the twice-bearing-raspberry may be planted, which requires no particular soil, but only to be taken up and have the soil renewed every four or five years; which, indeed, is the case with all travelling-rooted plants, which it is desired should continue to fruit freely. The row of trees adjoining the street fence is supposed to be damsons, which come early into flower; and the fruit, being small and thickly set among spines, is not easily stolen. The plants on each side of the party-railing may be gooseberries, currants, or raspberries, according to the taste of the occupier; or they may be dwarf apples. The row of detached standard trees between the entrance gate and the porch (*b*) may be pears, trained *en quenouille;* that is, distaff fashion (see *fig.* 36.); or *en pyramide* (see *fig.* 37.); by either of which

modes they will occupy little space, and look well: some kinds also bear well when trained in these manners. Fig-trees or vines may be trained in the spiral manner round stakes. Behind these trees, against the wall, we would train common laurels, laurustinus, or ivy; because, though currants or gooseberries would be more appropriate there, yet under the shade of the pear-trees they would not thrive; besides, if they would thrive, we think they ought to be sacrificed, in this particular spot, to the evergreens mentioned. We may observe, here, that the beds in which the strawberries are grown will be improved in effect if they are either surrounded with a marginal line of brick or tiles,

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or if the surface is covered by some description of stones, pebbles, flints, or vitrified bricks. The cause of this improved effect is, the contrast between rocky or stony materials and the turf.

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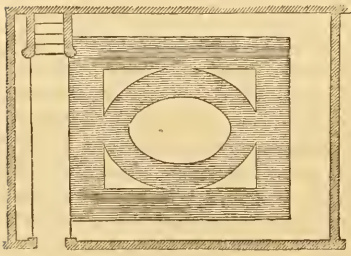

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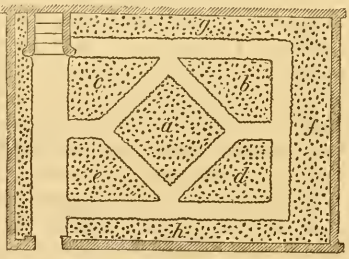

130. *To vary the plan of these gardens, figs.* 38. and 39., for ornamental flowers, might be substituted for the front gardens, shown in *fig.* 35.; and provided the family residing in the house were fond of gardening, and wished for occupation in the open air, they might be planted as follows: for training against the upper part, Passiflòra cærùlea and *Técoma* (Bignòn*ia*) capreolàta (which, as fast growers, would need a good deal of training), and *Ròsa* rùga, sanguínea, Noisett*iàna*, and other China roses, might be planted, which, during summer, would not only require training, but constant attention to keep down the aphides, and to remove the decayed blossoms and their stalks. If the aspect were east or west, *Técoma* (Bignòn*ia*) radìcans, Lonícer*a* flexuòsa and gràta, Wistàr*ia* sinénsis, camellias, myrtles, and climbing roses, might be employed. The wistaria, the tecoma, and the evergreen climbing roses

would reach to the top of the house, and the others would cover the lower part. The myrtles and the camellias would require to be matted during the severest weather in winter, and the other plants would occasion a good deal of pruning and training during summer. On the supposition that the occupier of the house was a lady, we would not recommend any climber to be planted against the house that would grow higher than 4 ft. or 5 ft.; but such as myrtles, camellias, pelargoniums, fuchsias, &c., as these would not need the use of a ladder to train them. The side and front walls of the front garden may be covered with China roses, different varieties of honeysuckles, and *Jasminum officinàle*. Against one of the side walls, if there be room, a double-flowering pomegranate may be planted in the centre; and against the others Magnò*lia* conspícua or purpùrea. In the beds in the interior of this garden, we would plant nothing but flowers; or we might devote the centre bed *a* in *fig.* 39. to moss roses, or to some other kind or kinds of rose belonging to sections different from those which include the China roses. In the centre of this rose-bed there might be a standard rose. At the end of this work we shall give selections of roses, as well as of herbaceous perennial, biennial, and annual flowers.

131.—*In choosing the flowers for the beds*, the best and easiest way is to choose greenhouse plants, which will produce a brilliant effect from May to September, though they will require to be renewed every year, and which, in London, at least, may be procured at a very moderate cost from the hawkers in the streets. But where permanent flowers are preferred, the objects to be kept in view ought to be to have an equal number of kinds of flowers in bloom, if possible, every month in the year, and to have an equal number of the different colours displayed at the same time. This is a sort of *beau idéal*, which, however, cannot be carried into practice in the winter months; but it is, nevertheless, useful as a guide as to what ought to be selected. Other guides are, that such plants only should be planted as will grow in the same soil, and with the same aspect; that plants placed adjoining each other should not be very different in size and habit of growth when full-grown, lest the one should choke the other, and lest the assemblage should appear inharmonious; nor very different in their natural vigour of growth, lest the roots of the one should occupy a much greater portion of soil than the others. To plant pæonias, everlasting peas, asters, *Papàver orientàle*, and such like plants in juxtaposition with daisies, hepaticas, and pinks, would be attended with the suffocation of the latter diminutive kinds; but the very tallest and the very lowest plants may be included in the same bed, provided it is very large, and there be a gentle gradation observed between the one and the other. If the bed is to be seen from every side, then the tallest growing kinds can be placed in the centre, and the lowest in the circumference, and the intermediate sizes between them, so as to rise in gradation from the lowest at the margin to the highest in the middle. If the bed is a border, parallel to a walk, and to be seen only on one side, then the lowest plants should form a row next the walk, and the others should be placed behind them in quincunx, according to their sizes, the tallest being placed behind, and forming the last row. The distance at which one plant should be kept from another depends more on the habit of the plant with respect to lateral extension, than on the height to which it grows; thus a pæony, which seldom grows above 18 in. high, but which spreads its large leaves over a much

greater surface than is occupied by its roots, will require more room than a tall-growing phlox, which will reach the height of 4 ft., and not cover above a square foot of the surface of the border. Creeping plants also require more room than such as grow compact and bushy, or narrow and erect. The rule which we have just given, of not associating plants in the same bed that have different habits, directs that creepers, and climbers or twiners, should always be planted by themselves, or at least, not introduced indiscriminately among other plants. At the same time, a plant with one of these habits, introduced occasionally into a miscellaneous border, has a good effect by contrast. Where creepers alone are employed, if each plant be of a different kind, they ought to be kept as distinct from each other, as bushy or tall plants ought to be; but where a bed is entirely filled with creepers of the same kind, then they may be allowed to cover the whole surface of the bed; because the object of the planter in this case must necessarily be to produce a mass of one kind of form and colour. In general, small plants ought to be chosen for small beds, and dwarf-growing plants for beds of irregular figure; but of course this must be regulated by circumstances.

132. *The back garden* has fruit-trees against all the walls, and some standards and dwarfs in the central beds. The spaces *h h*, in both gardens, are supposed to be devoted to annual crops, such as peas, spinach, salading, &c. The beds marked *i*, in both gardens, may be planted with asparagus, sea-kale, and tart rhubarb. The potherbs are supposed to be grown in the borders next the walls. The three fruit-trees at *k* are Hawthornden apples (standards), for immediate effect in bearing, and to be cut out in a few years after the three rows of dwarf-trees, shown in each garden, have come into full bearing. If the front gardens supply a sufficient number of gooseberries and currants, these dwarf-trees may be apples, pears, cherries, and plums; but gooseberries and currants may be substituted for these, if those grown in the front garden are not considered sufficient. In order to insure good crops, the ground among the dwarf fruit-trees should not be cropped with vegetables, but only occasionally manured on the surface, and forked over to the depth of a few inches. The trees against the walls, on the supposition that the direction of the gardens is east and west, may be peaches and nectarines on the south aspect, plums and cherries on that facing the north, and apricots on the end wall; but, if the garden should lie in the direction of north and south, the peaches, nectarines, and apricots may be planted against the side-walls, and figs and vines against the end-wall that faces the south; or morello or other cherries or plums, if it faces the north. The edgings to the walks of the back garden we have supposed to be box; but strawberries might be substituted, more especially if the walks were formed of flagstone.

133. *Another mode of planting the back gardens of fig.* 35.—For this mode of planting we shall suppose the gardens to be laid out like that in fig. 34. in page 71, as in no kitchen-garden whatever, whether large or small, would we introduce standard fruit trees among the kitchen crops; because, as we have already stated (§ 119.), the digging and trenching necessary for the perfection of the latter, prevent the roots of the trees from spreading near the surface of the ground; and being forced to seek their nourishment in the subsoil, they run to wood from excessive moisture, become cankered, and do not produce either abundant crops or well-flavoured fruit. In a small garden of the kind we are treating of, standard trees would shade the ground so

much, that, independently of other consequences, they would render it altogether unfit for the culture of culinary vegetables. We therefore propose to have no standards, but only trees trained against the walls, or boundary fences, and on the trellis-work. On the latter, we propose to train gooseberries, currants, and raspberries, and one or two apples and pears; and on the walls, peaches, nectarines, grapes, figs, apricots, cherries, and plums.

134. *The walls.*—We shall suppose that one of the side walls faces the south, and is 100 ft. long and 7 ft. high. On this may be placed ten trees, to each of which there will be 70 superficial feet of walling; and a vine may be placed at each end, and one in the middle, from each of which a single shoot may be trained close under the coping of the wall, so as never to interfere with the other fruit-trees. The peaches, in order to prolong the season of that fruit, may be the red nutmeg, which ripens in July, and is hardy, but bears small fruit; or the early Anne, which ripens in August, and bears very good fruit, but is rather tender; the grosse mignonne, and the bellegarde, both ripening in September; and the late admirable, ripening in October. The nectarines may be the Elruge and the violet hâtive, both ripening in August; the Pitmaston orange (September); and the late yellow, which, though not common in this country, is of good flavour, and a very good bearer, ripening in October. The best dark fig is the brown Turkey; and the hardiest and most abundant bearer amongst the light-coloured figs, is the small green; or the Brunswick, or the large blue or purple fig, both which produce very excellent fruit, and are very hardy and very prolific, may be substituted. The grapes may be the royal muscadine, the black sweetwater, and the esperione, which is one of the greatest bearers in the open air. In favourable situations, the red Frontignan will also ripen against a wall with a south aspect in the climate of London, and it has a very excellent flavour, even when grown out of doors. The wall having an east or west aspect, may be planted with the large early apricot, which ripens about the middle of July, the Moorpark (beginning of August), and the Turkey, which ripens about the end of August, or later. For the wall with a northern exposure, we would recommend the May duke and morello cherries, the one the earliest, the other the latest sort; the bigarreau couleur de chair, and the black Tartarian, a large cherry of the very richest flavour, and which will hang on the tree, if covered with a net, till September. The best and most useful plums are, the green gage, Washington, Coe's golden drop, Orleans, and the white magnum bonum, or the diamond plum, the latter being a very large and handsome fruit.

135. *The trellis* (which may be arranged as in *fig.* 34. in p. 71.) will be above 200 ft. in length; and, as we suppose it to be only a single trellis, that is, one which is calculated for having the trees trained on only one side, it may be planted on the north side of the garden, where it is most exposed to the sun, with pears; at the two ends with apples; and on the south side with gooseberries, currants, and raspberries. Eight pears will be sufficient; and these may be the jargonelle, Marie Louise, Eyewood, beurré Diel, glout morceau, Chaumontelle, beurré de Ranz, and Easter beurré; all excellent pears, quite hardy, and good bearers. The first ripens in August and the last may be gathered in November, and will keep in sand or in fern, packed in jars set in a cool cellar, till May or June, or indeed till pears come again. The other sorts are placed in the order of their ripening. The apples may

be of four different kinds, viz. the golden and Ribston pippins, and the Hawthornden and Keswick codlin. The latter two are most abundant bearers, and the fruit is not only good to eat, but falls well in boiling. As the trees of these varieties grow with great luxuriance, they should be carefully attended to during spring and early summer, to pinch out a large proportion of the young shoots before they have matured their leaves, in order to prevent the plants from becoming too luxuriant.

136. *The gooseberries*, and other small fruits, may be planted quite thick, and only two shoots trained in a vertical direction from each plant. They may be placed 2 ft. apart, which will require forty-five plants. The sorts we would recommend are :—*Red:* the red champagne, an early and excellent fruit; the early rough red; the ironmonger, an excellent fruit for tarts and bottling when green, and for the table when ripe; and Aston's Warrington, an abundant bearer, which retains its fruit till October if protected: to these may be added, for those who like large fruit, the huntsman and the roaring lion; the former having won 141 prizes in the third and fourth years of its being exhibited, and the latter above 800. *White:* Whitesmith, early, prolific, and excellent; crystal, much esteemed for bottling; Taylor's bright Venus; and the white Dutch, which is preferred to every other kind for making British champagne. *Yellow:* Rockwood, a large early gooseberry, which gained 777 prizes in five years; and rumbullion, reckoned the best in the markets for preserving. *Green:* Massey's heart of oak, early and a great bearer; greenwood; and the Pitmaston green gage, remarkably rich and sweet. In all fourteen sorts, and the quantity planted of each may be proportioned to the taste of the occupier. The currants may be the red Dutch, Knight's early red, and Wilmot's large red; the white Dutch; the champagne, which is of a pale flesh colour, which, though it ripens very early, will hang on the trees without protection till October, and with a covering (such as will be hereafter described) till December; and the black Naples, which is remarkably fine and large. The raspberries may be the early prolific, the red and yellow Antwerp, and the double-bearing or late cane.

137 *The walks in the back garden* we propose to be edged with strawberries; and, if space could be spared, the alleys inside the espalier trellis might be edged on both sides with strawberries also. These edgings would in all be about 800 ft. in length, and they might be planted with the following kinds, the large sorts being placed next the broad outer walk, and the small sorts on each side the alleys. The strawberries for the margin of the outer walks may be the old scarlet and Grove End scarlet, which are the earliest; Keen's seedling, which is a great bearer, and, taking it altogether, the best strawberry in cultivation; the roseberry, which is a very great bearer; the old pine, which is the best-flavoured of all strawberries, though a shy bearer; and Wilmot's superb, which, though it has not much flavour, is remarkable for its size. For the margins of the alleys we would recommend, as having small leaves and bearing the fruit on high erect stalks, which are not likely to be injured by the feet of persons walking along the alley, the prolific or conical hautbois, the large flat hautbois, the red and white alpine, and the red and white wood. The last four kinds, if regularly supplied with water, will continue in bearing all the summer.

138. *Culinary crops.*—The space left for these, in a back garden of the size shown in *figs.* 34. and 35., and laid out in the manner we have described,

with flagstone walks, will be but small; being merely a bed about 12 ft. wide by 75 ft. long. To make the most of this plot, it must be divided into smaller beds, say fifteen, each 4 ft. wide, with 1 ft. alleys between, as shown in the figure; and that, at the lower end, as nearest the entrance through the trellis, may contain the perennial potherbs, such as chives, garlic, sage, marjoram, winter savory, thyme, fennel, tarragon, burnet, and mint, the last three being the most useful (tarragon for vinegar, and for flavouring salads and steaks; burnet, at all seasons, for salads; and mint for boiling with peas, and for sauce to lamb, &c.) Annual and biennial herbs, as parsley, chervil, and pot marjoram, may occupy an adjoining bed, double space being required for them; because, while one crop is in use, another must be sown to succeed it. For a very small family, not particular in their cookery, one bed, 12 ft. in length and 4 ft. in breadth, will be quite sufficient for the whole of these herbs, perennial, annual, and biennial. The remaining part of the plot allotted to kitchen crops may be occupied by those vegetables which it is always convenient to have at hand; and by such as never can be so well procured at market, or from the greengrocer, as direct from the garden. Among these lettuce may be included, as always convenient for making a salad, and we would therefore devote the beds 2 and 3 to a succession of this vegetable; bed 4 is for small and other salading, such as mustard and cress, radishes, lamb's lettuce, American cress, &c.; in beds 5 and 6 we would sow winter spinach, which, if the Flanders kind be chosen, will afford a dish now and then throughout the winter, and in spring twice or thrice a week, from April to August; beds 7 and 8 may be planted with scarlet runners, two rows lengthwise in a bed, and these will afford a small dish of kidneybeans every other day, from June till they are destroyed by frost; and beds 9 to 15 may be devoted to peas, that being a vegetable never to be obtained good, except direct from the garden; because, in a few hours after peas are gathered and put in baskets or sacks, they begin to heat and ferment, and when dressed they will be found to have become tough and vapid. The most suitable sorts of peas for a very small garden are the blue Prussian, Knight's marrow, and the dwarf marrow; because these have the seeds, or peas, large. The frame and the Charlton are early varieties, but both the seeds and the pods are small, and the peas are neither so succulent nor so sweet when cooked as the kinds before mentioned. Whatever kind of pea is sown ought to be staked as soon as the tendrils appear; because, in this way, the plants occupy less room. The kind of staking or supports proper for peas in a small garden is, a line of rods on each side of each line of peas, and at about 3 in. distant from them, with pieces of string stretched horizontally from rod to rod, so as to leave a clear space between the line of rods 6 in. wide, in which the peas will grow up, and support themselves by clasping the strings and rods. The rods may be from 3 ft. to 5 ft. apart, and from 3 ft. to 4 ft. in height; the first string may be 18 in. from the ground, and the others 9 in. apart. The rods, if Kyanised before being used, will last several years; or light iron rods, formed by bending quarter-inch iron rods in the form of a hair pin, as shown in

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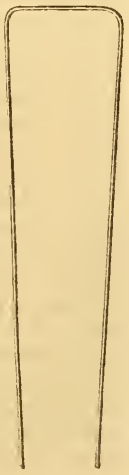

fig. 40., and which will not cost above 2*s.* a dozen, may be used. There are wire hurdles sold for the same purpose, and also iron stakes; but both are much more expensive, though not more efficient, than the light iron rod we have mentioned.

139. *Wall borders.*—We have now planted and cropped the whole of the back garden, unless we except the wall borders, in which there is the row of strawberries that forms the edging to the walk on that side; and the narrow space between the strawberry edgings to the other side of the main walks, and the espalier trellises, in which we would not plant or sow anything.

140. *First expense.*—The laying out, including the trellis, manure, &c., may be set down at from 30*l.* to 40*l.*; the fruit-trees, two years trained, will cost, at an average, 2*s.* 6*d.* each, say 5*l.*; the gooseberries, currants, &c., 4*d.* each, say 20*s.*; the strawberries, 4*s.* per 100, 32*s.*; the potherbs and seeds of the culinary vegetables, about 15*s.*; the flowering plants for the back garden, about 2*l.*; and the shrubs, plants, and bulbs, for the front garden, 5*l.* In all, the first cost will be from 45*l.* to 55*l.*; the difference depending principally on the cost of the labour and materials expended in forming the walks, and in trenching and manuring the ground. This estimate is only to be considered as a rough approximation to what would be the actual cost; because so much depends upon the nature of the soil and subsoil, and the drainage and new soil required, the price of flagstones, of manure, &c., independently of the price of labour, that it is impossible to make an accurate estimate, unless a specific case were given. On turning to our priced lists, the cost of trees, plants, and seeds, in London, may be ascertained with something like certainty; but the exact price of every other particular must depend on the quantity and kind of work to be done, as well as on local circumstances.

141. *The mode of management* of a garden thus laid out and planted requires to be next noticed. We shall suppose the occupier to be desirous of managing it himself, and to be able to devote to it his spring, summer, and autumn evenings. We may premise that, in such a limited space as we have been treating of, and so closely planted, if the greatest and most unremitting attention be not paid to its management, it will soon become a mass of confusion; and, while some trees are in full vigour and overgrowing the others, some will be choked by shade, so as to produce no fruit worth eating; and others will be eaten up by insects. The great object that must be constantly kept in view, in the cultivation of such a garden, is, to keep every tree and plant within the limits assigned to it. This must not be done by merely cutting off superfluous branches in the usual manner, but by preventing them from being produced, by lowering the strength of the tree. This is to be done by disbudding, and by pinching off the young shoots at the extremities of the branches, and wherever else they would require to be cut off, if allowed to grow to maturity. Another important point to attend to in the management of the fruit trees and flowering shrubs is, to preserve their foliage, at all times, in a perfectly healthy state, and to keep it fully exposed to the sun and air. For this purpose, the strictest watch must be kept for the appearance of insects; and means taken to destroy them, if possible, in the egg state, or, at all events, as soon as they are hatched. During the whole summer, every tree and bush on the premises will require to be syringed with water in the evening of every day that it does not rain; and, when insects appear, instead of common water, lime water, soapsuds, or tobacco water

must be used. The strawberries will require watering every evening, from the time they come into blossom till the fruit is set; and the alpine and wood kinds, as they bear fruit the greater part of summer, will require additional watering in proportion. The flowers in the wall borders, and the ground between the wall and the walk, and also the ground under the flagstones, will require frequent watering; and, indeed, the wall border and the espalier border ought to be mulched with half-rotten dung, to keep the ground constantly cool and moist. Neither should ever be dug, but merely be pointed on the surface with a three-pronged fork; except in so far as may be necessary for renewing the strawberry edgings. The runners from these strawberry edgings must be constantly taken off, as soon as they extend 6 in. from the plant over the walk; or 12 or 14 inches over the border, except when young plants are required to substitute for the old ones. The crops of culinary vegetables in the centre beds will require constant watering every evening during the whole summer, except when it has rained; more especially to render the peas productive and succulent, and the lettuces and other salading, crisp and tender. As soon as one crop of any article is ready to be removed, another should be sown or planted to succeed it, the ground being previously well dug, and manured if necessary. A constant look out must be kept for insects on the culinary vegetables, herbs, and flowers, as well as on the fruit-trees; and, throughout the whole garden, snails, slugs, and worms must be destroyed as soon as they are perceived. The plants in the circular bed in the front garden should be taken up late in the autumn of every year, and the ground trenched; a fourth part of the soil removed, and a fourth part of fresh soil added, with a portion of thoroughly-rotted manure, if necessary; after which the plants and bulbs should be replanted, and new ones substituted for such as may have become shabby, or are dead, or for the sake of change. This mode of re-invigorating the soil, if not performed every year, should be performed every second or third year, otherwise the stronger plants will overrun the weaker ones; and the bulbs, especially the hyacinths, which ought to constitute the principal beauty of the bed in spring, will degenerate, and cease to be ornamental. The roses against the wall in the front garden will require to be constantly watched, lest the aphides should make their appearance; and, the moment any are seen, watered with weak tobacco water, being washed immediately afterwards with pure water, to prevent the tobacco water from disfiguring the plants. A receipt for the preparation of this tobacco water, and more particular directions for using it, will be given hereafter. The roses will require to be taken up, the soil renewed, and all the old wood and roots cut out, every three or four years; that is, if it is wished that they should flower freely, and display themselves to the greatest advantage. Both the flowers and rose-trees in the front garden will require constant watering; and the vine against the back front, and the wistaria, honeysuckle, and jasmine, against the street front, will require to be watered over the leaves with the syringe, as well as at the root; and to be summer-trained and pruned. Many other minor operations might be enumerated; but the above are enough to show that, where the most is intended to be made of even the smallest-sized fourth-rate suburban garden, if planted in this manner, there is work enough for one person, every evening, say from six till it grows dark, throughout the spring, summer, and autumn months; besides work that must be done previously to six o'clock, in the months when

it is dark at that hour; such as digging and cropping the culinary part of the garden, &c.

142. *Expense of management.*—If the operations of culture and keeping are performed by the occupier himself, the annual amount of money required to be laid out will be very trifling. The first year, a good garden syringe, some watering-pots, a pruning-knife, a hammer, nails and list, a spade, rake, hoe, trowel, and three-pronged fork, a garden line, baskets, and ladder for the vine, &c., against the house, amounting in all to about 10*l.* or 12*l.*, will require to be purchased; but the second and succeeding years there will only be wanted a few garden seeds, manure, tobacco, or other articles for destroying insects; nails, list, matting (for tying the espaliers, and for protecting any of the tender ornamental plants during winter, and the blossoms of the tender fruits in spring), and some occasional repairs and renewals; the cost of the whole of which cannot exceed 1*l.* or 2*l.* To employ a gardener to do all the work requisite in such a garden, during the summer months, would cost at least 3*s.* or 3*s.* 6*d.* per day; and thus, supposing him to work, at an average, three days a week, from the 1st of March to the 1st of November, the cost will amount to about 10*l.* at 3*s.* a day, and 12*l.* at 3*s.* 6*d.* The remaining part of the year, viz. from the 1st of November to the 1st of March, (about seventeen or eighteen weeks,) need not cost, on an average, more than 3*s.* 6*d.* a week. The whole expense, including seeds, &c., would thus be about 20*l.* a year. Where a man-servant was kept who was fond of gardening, he might, with occasional instructions during the first year from a professional gardener, perform all the work requisite.

143. *The produce* of such a suburban garden would, if a hired gardener were employed, probably not be worth more than the expense, if so much: but the great satisfaction of seeing the things in all their different stages of growth, and of being able to procure fresh salading and herbs nearly all the year; and, at the proper seasons, spinach, kidney-beans, and peas, when wanted, quite fresh out of the garden; will more than compensate for the outlay required to any person who can afford it. To those who cannot, or who do not wish to incur the necessary expense, we shall suggest a cheaper mode of planting and management.

A more economical mode of laying out and planting a back garden of the size of one of those in *fig.* 35. In this case, we would advise the trellis and strawberry edgings to be omitted, and the cross beds to be extended to the margins of the paved walks. One of these beds may be planted with gooseberries, another with currants, and a third with raspberries; and the other beds with kitchen crops and herbs, much in the same manner as indicated above, except that there will be only three beds for peas, instead of six. Against the house, there need not be any vine or other plant trained; and the circular bed in front may be planted solely with bulbs and annuals. This will lessen the first cost of the garden one-fifth or one-sixth, and the labour and expense of keeping it one-half.

§ 3.—*Suburban gardens, where the principal object is ornamental display.*

Design VI.—*To lay out a small suburban garden, where the main object is a display of ornamental trees and shrubs and border flowers.*

144. *General arrangement.*—We shall suppose the extent and form of the ground to be the same as in *fig.* 34., p. 71., and that the walks are flagged,

and the ground thoroughly drained and prepared. The walls we would plant with flowering shrubs, instead of fruit-trees; and the trellis we would plant solely with roses. The centre of the garden we would lay out in beds, in which the finer kinds of border flowers might be cultivated; or, we would form a border on both sides of the rose trellis, and lay down the centre of the garden in grass. In selecting such flowers as might be grown in the beds which we have supposed laid out within the space enclosed by the rose trellis, various objects may be kept in view, according to the taste of the occupier. He may have a favourite colour, or a favourite height; he may prefer climbing plants, or trailers, or bushy plants, or bulbs; or evergreen-leaved herbaceous plants, such as the pink, &c., to look well in winter. He may choose to make the greatest display in a particular month; or to cultivate plants which will continue in flower for two or three months at a time; or to grow only perennials or annuals, and so on. One of the most general objects of gardeners, in cases of this kind, is to have an equal number of plants in flower during every month of the floral year, which consists of nine months, rejecting the three winter months. Of those in flower in each month, the next object is to have an equal number of each of the most prevalent colours; and more particularly of red, scarlet, orange, purple, blue, violet, yellow, and white. Where this is the object in a small garden, like that which we propose to plant, we would recommend a bed for each month; or, if the plants are to be arranged in borders, a row for the same period; or, rather, an imaginary row, so that there might be an equal quantity of plants in flower at the same time in every part of the border. Both in borders and in beds, it is desirable to place the lowest plants next the walk, and the tallest at the greatest distance from it, so as to produce a sloping surface of vegetation, in which mode it will be found that the most effectual display is made; the green foliage of the plants not yet come into flower, or that of the plants which are gone out of flower, contrasting advantageously with those in full bloom. The front garden may be surrounded by a border, and have a small circular, square, or diamond-shaped bed in the centre; or it may be laid out in many different ways, some of which are shown in *fig.* 41., care being taken

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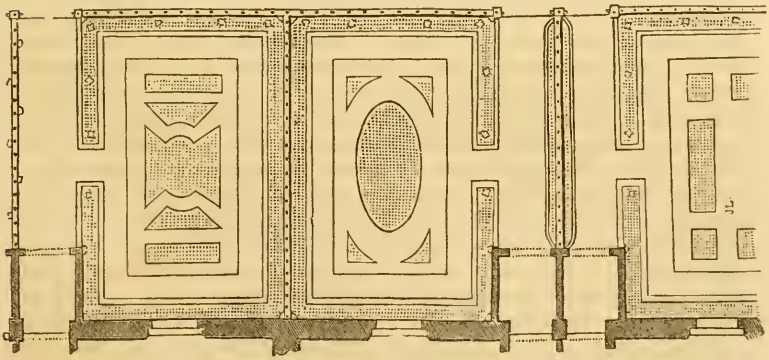


to employ artist-like shapes for the beds, and never to have less than 1 ft., or, what is still better, 2 ft., of turf between one bed and another; and between

the beds next the walk and the wall. The wall of the front garden facing the south may be planted with the more showy evergreen and deciduous shrubs, the planter being guided in his choice of kinds by the desire of displaying different sorts from those prevalent in the adjoining gardens, in order to increase the general variety of the street. As there will be 230 ft. of walking in the back garden, and 30 ft. of walking in the front garden, if 4 ft. be allowed for each plant, 60 different sorts may be introduced, which will include all the finer climbers, twiners, and showy flowering shrubs in cultivation in British gardens, exclusive of the rhododendron and heath families, which, in general, are unsuitable for training against walls. From this general rule we except the stronger-growing rhododendrons, the tree hybrids of which may be placed against the wall with a south aspect; and *R.* pónticum and *R.* catawbiénse, with their varieties, against the wall with a northern exposure. Some of the more hardy azaleas might also be planted against this wall. The rose trellis being above 160 ft. in length, 80 sorts, allowing 2 ft. to each plant, might be displayed on it; in which might be included all the very best kinds; and in addition there might be standards placed along the trellis at regular distances, which, at 10 ft. apart, would give 16 sorts more. The 15 beds contain 50 square feet each; and, allowing 2 square feet to a plant, this would give 350 herbaceous or flowering plants; so that the collection in the back garden would stand thus:—60 select climbing, and other deciduous and evergreen flowering, shrubs; 96 kinds of choice roses; and 350 kinds of choice flowers. Besides these, there might be a border of candytuft, or ten-week stock, slightly mixed with mignonette, on each side of the main walk. The choice of the shrubs and plants we shall leave the reader to make for himself from our descriptive lists; recommending him to introduce the evergreen shrubs here and there among the deciduous ones, so as to make the evergreen kinds prevail on the border with a north aspect, and to place the tenderer kinds on the wall which faces the south. Fragrance and the beauty of foliage should be kept in view, no less than the beauty of the flowers.

145. *Mode of management.*—This garden may be managed with greater ease and certainty of success than one where fruit-trees are grown against the walls; because the care and labour requisite to bring a plant into flower is only a part of that which is necessary to bring its fruit to maturity. Pruning, watering, and destroying insects, particularly the green fly and thrips, from the roses, will be the principal operations during the summer months; and, in autumn and spring, the greater number of the herbaceous plants will require to be taken up and replanted. At these seasons, also, pruning and training will be required both for the roses and shrubs against the wall. During winter, there will be scarcely anything to do, unless to mat-up any of the more tender kinds that may have been introduced; and, hence, this description of gardening is particularly adapted for being carried on by a lady, with her own hands. Instead of mats for covering any of the more tender trees against the wall, pieces of foolscap paper, or even old newspapers, dipped in, or painted over with, hot oil, will be equally effective; the object being to reflect back the rays of heat radiated from the wall. The papers may be fastened on with small nails; or they may be tied to nails already in the wall, or to the shoots of the trees.

146. *Estimate of expense.*—This will depend chiefly on the rarity and value

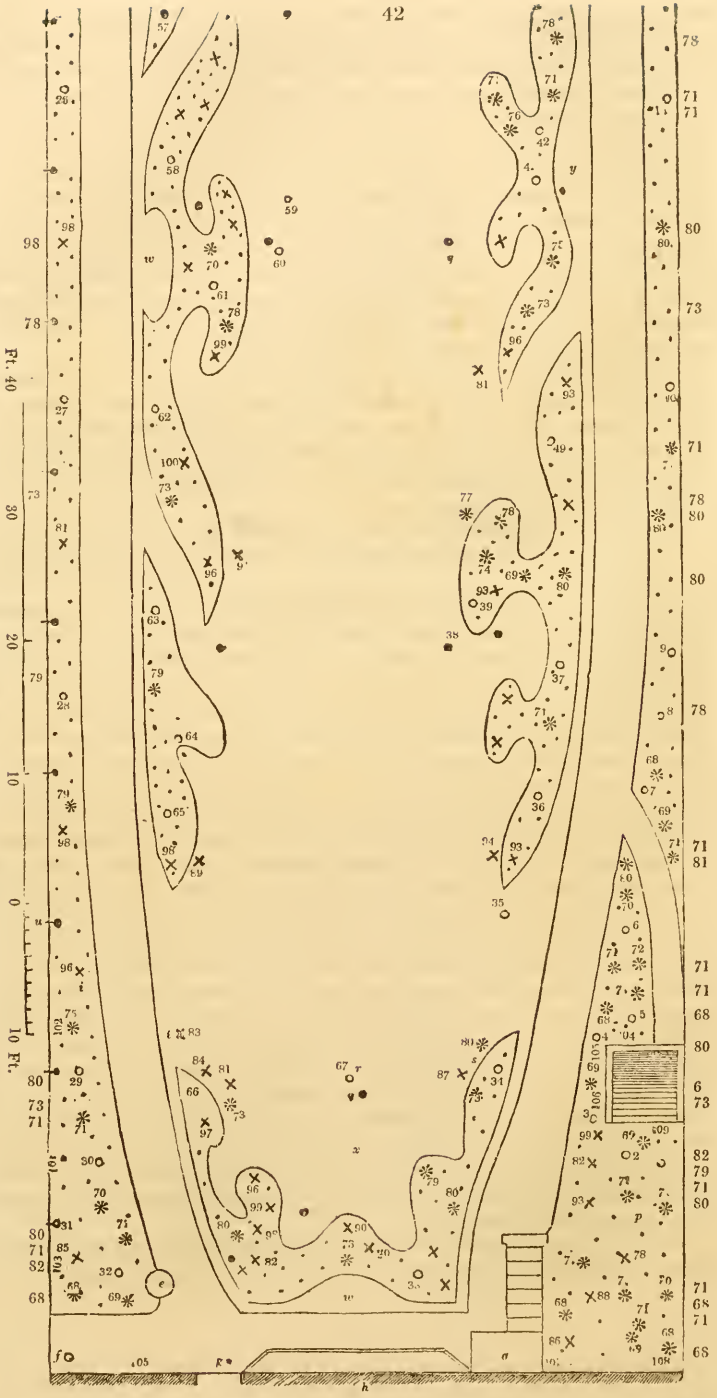
of the shrubs and plants chosen, which may vary from an average of 1*s.* to 3*s.* each. Taking them at the first sum, and estimating the total number at about 500, the amount will be 25*l.* 0*s.*; but the same number of plants might be chosen from the nurserymen's priced lists, of such prices as would bring the amount above 100*l.*, or under 10*l.* In the latter case, however, there would only be the more common kinds; and both the roses and the herbaceous plants would be purchased at so much per score, or per hundred. On the whole, the expense of laying out and stocking a garden of this sort would be much the same as if it had been planted with fruit-trees; but it has a great advantage over a fruit-garden, in admitting of being kept both with less labour and less skill. Supposing a commercial gardener employed to look after it, he might be required for two hours a day during June, July, and August; two hours, for three days in the week, during May and September; and two hours per week during the remainder of the year.

147. *The produce* would consist entirely of flowers, and the enjoyment in looking after them. The roses would demand a lady's attention during the whole summer. Every day some roses will have faded, and will require to be cut off; and every evening, except when it rains, the syringe, or the barrow-engine, should be brought into use. To keep down the insects will also require constant vigilance.

Design VII. *To lay out and plant a suburban garden, where the object is chiefly to make a picturesque display of ornamental trees and shrubs, with a few flowers.*

148. *General arrangement.*—For this example, we shall take a garden which was laid out and planted from a design of ours. The situation is a piece of flat ground, on the border of a common, within two miles of St. Paul's, London: it contains, altogether, about a quarter of an acre; and the soil is a strong loam. The house forms part of a row; and, from a stable, chaise-house, and poultry-house being placed alongside of the dwelling, the frontage, and, consequently, the width of the back garden, is upwards of 60 ft. There being no common sewer, or general system of drainage, in the neighbourhood, the most defective part of this residence is the dampness of the surface of the ground in wet weather. The drains of the walks, however, are conducted to a well at the further extremity of the garden; whence the water, after heavy rains, may be pumped up to a gutter, which is conducted along the surface of the common. The situation, though flat, is not without some distant prospect, that is intended to be seen from the floor of the living-room (which is about 5 ft. higher than the surface of the garden), broken and varied by the trees which are to be planted. The shrubs will be, for the most part, below the eye; and the finer flowers are intended to be chiefly confined to the front garden; in which, in order to form a greater contrast with the back garden, it is only intended to have climbers against the house and the side walls. The portion of the front garden before the coach-house and stable is separated from that before the house by a wall; thus giving a yard for the poultry, and room for cleaning the horse, chaise, &c. The only trees in the front garden are a row of thorns of six different kinds, placed close by this partition wall, in order to hide the view of the poultry and chaise-yard from the parlour window.

149. *The house, the boundary fences, the walks, and the outdoor buildings,* were designed and carried into execution before our advice was asked, and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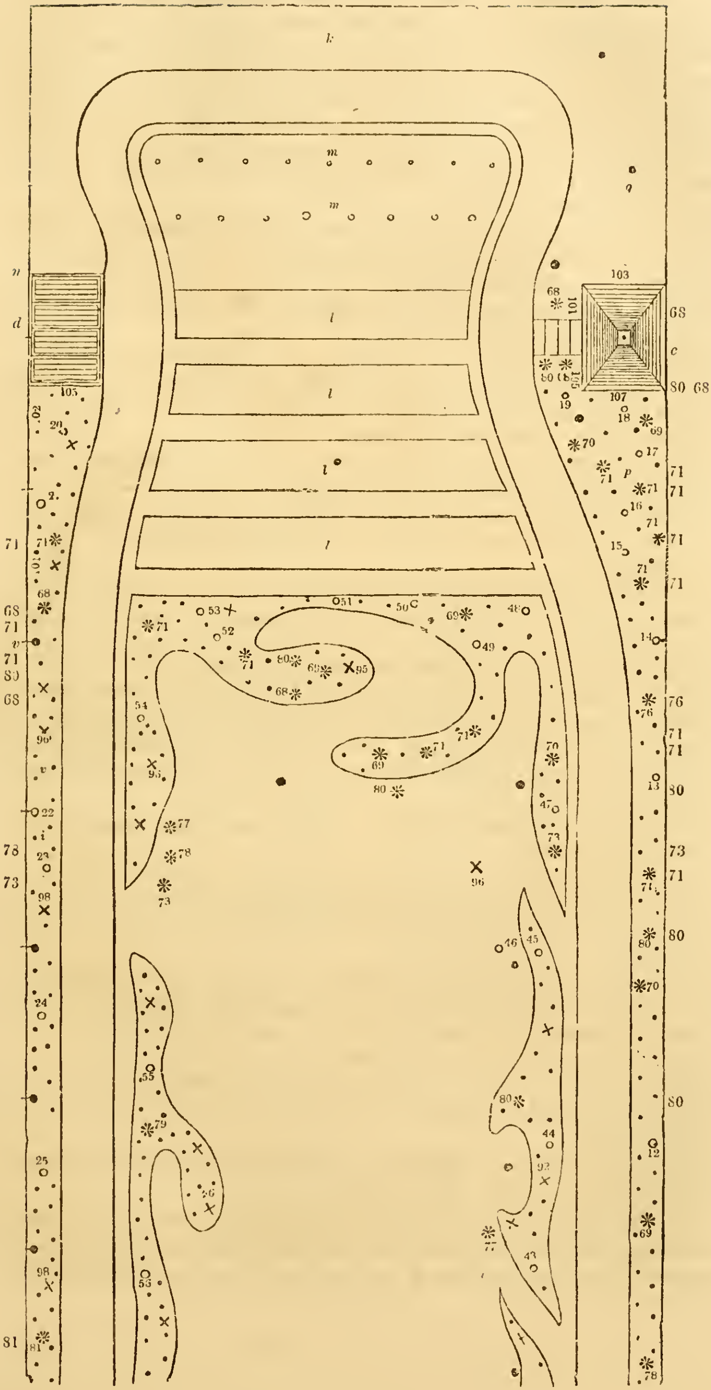


were to be considered as unalterable. Some asparagus beds, sea-kale beds, and gooseberry bushes were planted, and were also not to be disturbed. All that was left for us to do, therefore, was to arrange the beds on the plot of lawn, or turf, which formed the principal part of the area of the back garden; and to indicate the kinds of trees and shrubs to be planted in these beds and in their side borders. This we did on a working plan, of which *fig.* 42. occupying pp. 96. and 97. is a copy, accompanied by the following explanatory references; to which we shall subjoin a list of the trees and shrubs planted, with their prices:

a The door of the house, which opens on a landing covered by a trellised porch; from which a flight of seven steps descends to the garden walk.

b, Privy. *c*, Summer-house.

d, Pit for cucumbers, heated by dung from the stable; thrown into a vault, through a door at one end.

e, Raised cover to a well. *f*, Pump. *g*, Door to the stable.

h, Situation of the dining-room window, being the only window of a sitting-room which looks into the garden; and with reference to the view from which window all the trees are planted.

i, Border of shrubs and flowers; the fence on this side being wooden pales, about 5 ft. high; the aspect south by east.

k, Border for rhubarb, sea-kale, chives, parsley, and other annual and perennial kitchen herbs: the fence here is a brick wall, 5 ft. high.

l, Asparagus beds.

m, Two rows of gooseberries, with strawberries between. The margin of the walks is, on one side, a continuation of the lawn, 1 ft. broad; and, on the other, box.

n to *o*, Part of the wall, on which currants may be trained.

p, Border of shrubs and flowers, with some trees, facing the north; the wall brick, and about 5 ft. high, covered with fruit-trees of different kinds; but which, from the aspect, are of little use as such. Beyond the fences, on the right and left, are similar gardens; and at the extreme end there is an open common in grass.

q, Dark circles, indicating the fruit-trees which are already planted, and are not to be removed.

r, Open circles, indicating the situation of trees to be planted.

s, Marks thus *, indicating the situation of evergreen shrubs to be planted. The dots, thus ·, indicate situations for herbaceous plants, annual or perennial.

t, Marks thus ×, indicating the situation of deciduous shrubs to be planted.

u to *v*, Twelve posts in the fence of pales, against each of which a China rose is to be planted, and trained on each side; and also allowed to overtop the wall, so as to break its formal outline.

w, Situation where a vase on a proper pedestal, a statue, or other architectural object, might be placed; taking care to connect it architecturally with the walk.

x, Situation where a small circular basin and fountain might be introduced.

y, Situations where chairs may be placed.

The different tools required for the garden, including the wheelbarrow and roller, are kept in a division of the stable; the flower-pots, &c., under the summer-house; and the mould and compost heaps near the east-end of the pit.

150. *In the disposition of the trees,* the object is, to preserve an irregular-sided vista along the centre of the lawn; to break the formality of the straight lines of the walks and fences on each side of it; to conceal the termination of the lawn, and hide the asparagus-beds; and to vary and partially conceal the scenery of the neighbouring side gardens and of the country beyond. The principle of guidance in the selection and disposition of the shrubs is, partly to cooperate with the above object; but principally to produce an agreeable variety of flowers and foliage throughout the whole space, and during every month in the year. For this purpose, certain evergreens (such as the laurustinus), and certain flowering shrubs (such as the China rose), are distributed throughout; the same variety of the species not being repeated, but different varieties. There are also shrubs for flowering at every season of the year: such as the chimonanthus and *Cydònia japónica* for autumn and winter; the mezereon for early spring; the common azalea and rhododendron for the beginning of summer; the clethra for August; and the arbutus and wych hazel for the latter part of the season. The whole of the trees and shrubs are of kinds which do not require peat earth, and may be purchased at moderate prices.

151. *The trees* are almost all of the low-growing and flowering kinds; under 20 ft. in height; and purchasable, on an average, for cash, at 1*s.* 6*d.* each. Their names are as follow. The prices were kindly put to them by a respectable London nurseryman:

1. *Pỳrus* spectábilis, the Chinese crab-tree, 1*s.*
2. *Quércus Ílex*, the evergreen oak, 1*s.* 6*d.*
3. *Thùja* occidentàlis, the American arbor vitæ, 9*d.*
4. *Laúrus* nóbilis, the sweet bay, 1*s.* 6d.
5. *Juníperus* virginiàna, the red cedar, 1*s.*
6. *Cytisus Labúrnum*, the common laburnum, 1*s.*
7. *Pỳrus* aucupària, the mountain ash, 1*s.*
8. *Pàvia* rùbra, the red-flowered Buckeye, or American horsechestnut, 1*s.* 6*d.*
9. *Pỳrus* pinnatífida, the cut-leaved white beam-tree, 1*s.* 6*d.*
10. *Cratæ'gus* odoratíssima, the sweetest-scented (large red-fruited) hawthorn, 9*d.*
11. *Cratæ'gus* Aròmia, the aronia (yellow-fruited) hawthorn, 9*d.*
12. *Cratæ'gus* Crús-gálli, the cockspur hawthorn, 9*d.*
13. *Cratæ'gus* tanacetifòlia, the tansy-leaved (yellow-fruited) hawthorn, 9*d.*
14. *Cratæ'gus* cordàta, the heart-leaved hawthorn, 9*d.*
15. *Bérberis* aristàta, the bristle-leaved berberry, 2*s.* 6*d.*
16. *Cratæ'gus* Crús-gálli var. *salicifòlia*, the willow-leaved cockspur hawthorn, 9*d.*
17. *Cratæ'gus* coccínea, the scarlet-fruited hawthorn, 9*d.*
18. *Cratæ'gus Azaròlus*, the azarole hawthorn, 9*d.*
19. *Cratæ'gus* nìgra, the black-fruited hawthorn, 9*d.*
20. *Cratæ'gus Oxyacántha* var. flàva, the yellow-fruited common hawthorn, 1*s.*
21. *Gymnócladus* canadénsis, the Kentucky coffee-tree, 1*s.*
22. *Piptàuthus* nepalénsis, the Nepa piptanthus, 2*s.* 6*d.*
23. *Kölreutèria* paniculàta, the panicled-flowering kœlreuteria, 1*s.* 6*d.*
24. *Liriodéndron* Tulipífera, the tulip-tree, 6*d.*
25. *Gleditschia* triacánthos, the three-thorned honey locust, 6*d.*
26. *Ailántus* glandulòsa, the ailanto, 6*d.*
27. *Cércis Siliquástrum*, the Judas-tree, 6*d.*
28. *Cérasus* virginiàna, the Virginian bird-cherry, 1*s.*
29. *Cytisus* alpìnus, the Scotch laburnum, 1*s.*
30. *Robínia* viscòsa, the glutinous locust-tree, or false acacia 1*s.*
31. *Cratæ'gus Oxyacántha* var. coccínea, the scarlet-flowered hawthorn, 9*d.*
32. *Cratæ'gus Oxyacántha* flòre plèno, the double-flowered hawthorn, 9*d.*
33. *Magnòlia* conspícua, the Chinese or Yulan magnolia, 3*s.* 6*d.*
34. *Cytisus Labúrnum* incìsum, the cut-leaved laburnum, 1*s.* 6*d.*

35. Robínia híspida, the rose acacia, 1*s.*
36. *P*tèlea trifoliàta, the three-leaved shrubby trefoil, 9*d.*
37. *C*érasus *Mahàleb*, the perfumed cherry, 1*s.*
38. *Amelánchier* Botryàpium, the snowy mespilus, 1*s.*
39. *C*érasus *P*àdus, the bird-cherry, 6*d.*
40. *C*érasus semperflòrens, the All Saints' cherry, 1*s.* 6*d.*
41. *B*étula álba péndula, the weeping birch, 3*d.*
42. *P*yrus Americàna, the American mountain ash, 1*s.*
43. *C*érasus nìgra, the black-barked cherry, 1*s.*
44. Cotonecáster frígida, the frigid cotoneaster, 1*s.*
45. *P*yrus bollwylleriàna, the Bollwyller pear, 2*s.* 6d.
46. *Sophòra* japónica, the Japan sophora, 6*d.*
47. *D*iospyros virginiàna, the Virginian lotus-tree, 6*d.*
48. *C*érasus lusitánica, the Portugal laurel, 6*d.*
49. *Negúndo fraxinifòlium*, the ash-leaved box elder, 1*s.*
50. *A*'cer rùbrum, the red maple, 1*s.*
51. Taxòdium dístichum, the deciduous cypress, 1*s.*
52. *Æ*'sculus cárnea, the pink-flowered horsechestnut, 1*s.* 6*d.*
53. *I*'lex *Aquifòlium* var., the common holly, with smooth-edged leaves, 1*s.* 6*d.*
54. Salisbùria *adiantifòlia*, the maiden-hair tree, 2*s.* 6*d.*
55. Gleditsch*ia* hórrida, the horrid-spined honey locust, 2*s.* 6d.
56. Aristotèl*ia Mácqui*, the Macqui-tree, 2*s.* 6*d.*
57. *P*rimus doméstica myrobálana, the myrobalan plum, 2*s.*
58. Halès*ia* tetráptera, the snowdrop tree, 1*s.*
59. *Catálpa syringæfolia*, the catalpa, 6*d.*
60. *E*uónymus latifólius, the broad-leaved spindle tree, 1*s.* 6*d.*
61. *I*'lex opàca, the opaque-leaved holly, 1*s.* 6*d.*
62. Virgília lùtea, the yellow-wooded virgilia, 2*s.* 6*d.*
63. *Negúndo fraxinifòlium* erispum, the curled-leaved box elder, 1*s.*
64. Magnòl*ia* acuminàta, the pointed-leaved magnolia, 2*s.* 6*d.*
65. Liquidámbar styracíflua, the maple-leaved liquidambar, 1*s.*
66. *Amygdalus* commùnis, the common almond, 1*s.*

The following is a List of Evergreen Shrubs:

67. *C*upréssus sempervìrens, the evergreen cypress, 6*d.*
68. *A*'rbutus *U*'nedo, the common and scarlet arbutus, 1*s.*, 8 plants.
69. *P*hillýrea angustifòlia, the narrow-leaved phillyrea, 1*s.* 6*d.*
70. *R*hámnus *A*laternus, the common alaternus, 1*s.* 6*d.*
71. *I*'lex *Aquifòlium* var., variegated hollies, 1*s.*, 23 plants.
72. *C*érasus Laurocérasus var., variegated laurel, 6*d.*
73. *R*hododéndron pónticum and catawbiénse, hardy rhododendrons, 6*d*, 6 plants.
74. Escallòn*ia* rùbra, the red escallonia, 1*s.* 6*d.*
75. Cratæ'gus *P*yracántha, the Pyracantha, or evergreen hawthorn, 6*d.*
76. *Aúcuba* japónica, the common aucuba, 6*d.*
77. *J*uníperus súecica, the Swedish juniper, 1*s.*
78. *B*úxus sempervìrens var., variegated box of different sorts, 6*d.*
79. *C*ístus sp., the rock rose of different sorts, 1*s.*, 2 plants.
80. *V*ibúrnum *T*inus, the laurustinus of different sorts, 6*d.*, 8 plants.

The following is a List of Deciduous Shrubs:

81. *D*áphne *Mezèreum*, the common mezereon, white, red, and autumn-flowering, 1*s.* 6*d*, 3 plants.
82. Chimonánthus frágrans, the fragrant chimonanthus, 2*s.* 6*d.*, 2 plants.
83. *H*amamèlis virgínica, the wych hazel, 1*s.*
84. Calycánthus flórida, the Carolina allspice, 1*s.*
85. *Syringa* vulgàris álba, the white lilac, 6*d.*
86. *Syringa* vulgàris purpùrea, the purple lilac, 6*d.*
87. *Syringa* pérsica, the Persian lilac, 6*d.*
88. *V*ibúrnum *O*'pulus *r*òsea, the Guelder rose, or snowball-tree, 6*d.*
89. *C*ytisus álbus, the white broom, 3*d.*
90. *Spiræa* bélla, beautiful spiræa, 6*d.*
91. Colùtea cruénta, the bloody bladder senna, 6*d.*

92. Coronílla E'merus, the scorpion senna, 6*d.*
93. Azàlea póntica, the common yellow azalea, 1*s.*
94. Symphòria racemòsa, the snowberry, 6*d.*
95. *Spártium júnceum*, the Spanish broom, 3*d.*
96. *Cydònia* or *Pyrus japónica*, the Japan quince, 1*s.* 6*d.*
97. *Clèthra alnifòlia*, the alder-leaved clethra, 6*d.*
98. *Hibíscus syrìacus* var., the althæa frutex, 6*d.*
99. *Ribes sanguíneum*, the red-flowered currant, 9*d.*
100. *Ribes aúreum*, the yellow-flowered currant, 9*d.*

All the crosses marked in the plan, which are not numbered, are for different sorts of roses; and the number of these may be increased at pleasure, diminishing the number of herbaceous plants in proportion, according to the taste of the owner; 6*d.*, 25 plants.

The following is a List of the Climbing Shrubs for covering the privy, summer-house, a part of the boundary-wall and porch, and part of the walls of the house:

101. *Caprifòlium flexuòsum*, the Japan honeysuckle, 1*s.* 6*d.*, 4 plants.
102. Common twining honeysuckles of sorts, 6*d.*, 6 plants.
103. *Clématis* and *Atrágene* of sorts, 6*d.*, 6 plants.
104. *Lycium bárbarum*, the Duke of Argyll's tea-tree, 6*d.*
105. *Jasminum officinàle*, the common jasmine, 6*d.*
106. *Ampelópsis hederàcea*, the five-leaved ivy, 6*d.*
107. *Rosa multiflòra*, and *Grevíllei*, the many-flowered rose, and Greville's rose, 1*s.* 6*d.*, 2 plants.
108. *Wistària sinénsis* (*Glycine sinénsis B. R.*), the Chinese wistaria, 1*s.* 6*d.*
109. Giant ivy, and Ayrshire rose, 3*d.*, 4 plants.

According to the above enumeration, there need not be a dozen duplicates in the garden; for, though there are some of the species repeated (such as the laurustinus, the *Cydònia japónica*, the Chinese rose, &c.), different varieties of each species may be chosen. The herbaceous plants may be selected on the same principle; so that, in this small garden of not quite a quarter of an acre, nearly 800 different kinds of ornamental plants may be exhibited.

152. *The herbaceous plants*, both for the front and back gardens, we left to be chosen by the lady of the house; and the reader may make choice of them from the lists given at the end of this work. It is proper to observe, however, that, as the trees and shrubs in the back garden advance in growth, the room for flowering plants will be diminished. After three or four years, there will not be much space within the beds fit for bringing fibrous-rooted herbaceous plants to perfection; because, for this purpose, it is necessary that the plants should have unobstructed light and free air on every side. As the trees and shrubs advance, therefore, they must either be thinned out to make room for the fibrous-rooted herbaceous plants, or a smaller number of these must be grown. The same remark would apply to the roses planted in the beds; because, to flower well, and look well, they require as much light and air as the others; and, like them, as has been before observed, they require to be taken up every second or third year, in autumn or spring, and parted, pruned, and replanted in fresh soil. Supposing the trees and shrubs, exclusive of the roses, not to be thinned out, or reduced by pruning, then, in five or six years, both roses and fibrous-rooted herbaceous plants would be choked. The best mode of proceeding in that case would be, to cease to dig the beds, and reduce or rake them to the same level as the turf, and to sow any spots

not covered with the branches of the shrubs with grass. This would look remarkably well, both in a picturesque and in a botanical point of view, for another five or six years, when it would become absolutely necessary to root up some of the larger trees, and to prune in, or cut over near the ground, some of the larger shrubs. This process of keeping the beds and groups in shape, by pruning and cutting down, might be carried on for an indefinite period, as may easily be believed by observing the great duration of hedges which are continually cut, and of coppice-wood. In order that the garden may always look well, an equal amount of pruning, thinning, and cutting over, should, as nearly as possible, be performed every year; and regard should be had, in doing this, always to preserve the same proportion between trees and shrubs, and between plants both of kinds which are evergreens and those which are deciduous; unless, indeed, it is thought that an improvement might be made by altering these proportions.

153. *Bulbs.*—Hitherto, we have supposed only fibrous-rooted herbaceous plants to be planted in the beds; but, if bulbs are mixed with these, the bulbs may be allowed to remain after the fibrous-rooted flowers have been removed: because they will thrive with much less light and air than the fibrous-rooted plants; and because they spring up and grow with great rapidity; flower early in the season, before the leaves of the deciduous trees have expanded so as to shade them; and, when they have done flowering, they fade speedily, and their foliage, when removed, leaves no trace of the plants behind, and, consequently, causes no unsightliness on the surface of the ground throughout the summer. Besides, there are certain kinds of bulbs, such as the scillas, some kinds of hyacinths, the snowdrop, and the narcissuses, which thrive better under a slight degree of shade than when fully exposed to the atmosphere. Bulbs, therefore, may be planted among groups of trees and shrubs, and in close shady places in suburban gardens, where fibrous-rooted flowering plants are inadmissible.

154. *In the borders under the side fences,* in this design, flowers of all kinds may be cultivated, during the entire existence of the garden; because, being unmixed with shrubs, except those which are trained against the fences, they would be freely exposed to the light and air, and might be taken up and replanted, and the soil renewed at pleasure.

155. *Culinary crops.*—With respect to that part of the garden which is cropped with asparagus, sea-kale, strawberries, gooseberries, and other fruit shrubs, very little need be said. The asparagus and sea-kale will require to be liberally supplied with manure; the strawberries taken up and replanted euery two or three years; and the gooseberries carefully pruned annually, so as to keep the bushes open for the admission of light and air; and when they cease to bear abundantly, they should be taken up, the soil renewed, or refreshed with new soil, and young plants planted. The renewal should take place by degrees, say one row at a time; so that the garden may never be without full-grown bushes, and, consequently, every year have its crop of fruit. The herbs should be taken up and replanted every second or third year. The roses and other plants trained against the fences and the house, will require to be regularly pruned, trained, and kept clear of insects, and, as they become unsightly, renewed. The box edgings, also, will require to be annually cut In June, and renewed every seven or ten years.

156. *Estimate of expense :*

	£.	s.	d.
The preparation of the ground, including the draining and the formation of the walks, in this garden ; will cost about	10	0	0
The trees required amount to 67 ; which, at the above prices, average 1*s.* 2*d.* each (cash), and come to	3	18	1
Shrubs and roses, 108, ...	4	2	6
Climbing Shrubs, 26, ...	0	19	3
Herbaceous plants, annuals, and biennials, 546 ; and, supposing the greater number of them to be annuals, they may be purchased for	6	6	0
In all . . .	£25	5	10

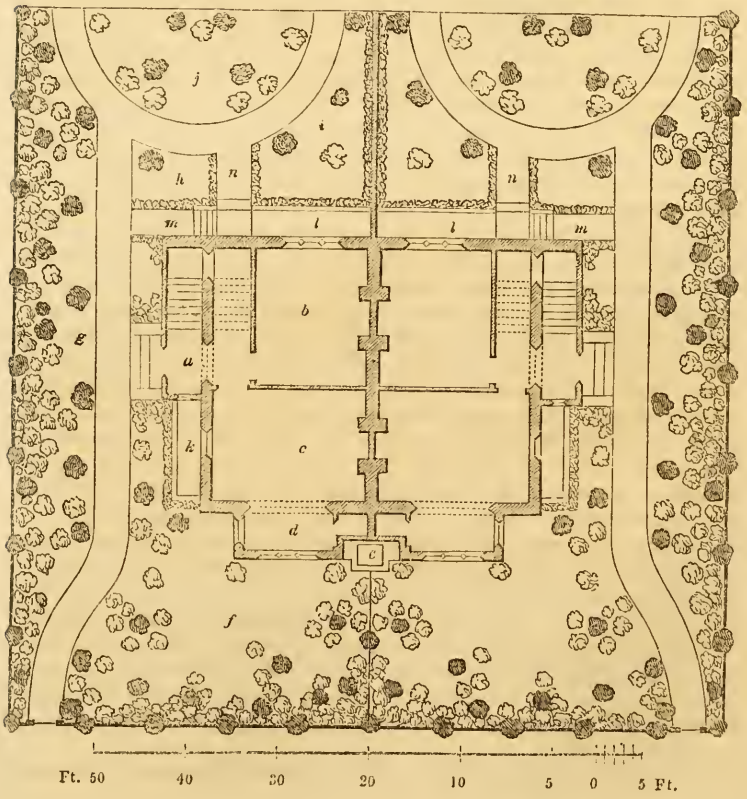
The plants were procured at the prices stated in the list, of Mr. Donald, nurseryman, Woking, Surrey.

157. *Management.*—A garden laid out in this manner may be managed with great ease, and at very little expense. During the spring months, such training and pruning as are required may be effected ; and, during summer, the chief operations will be mowing the grass, training the herbaceous plants and roses, and keeping the latter free from insects, by frequently syringing them with clear water, and daily hand-picking the aphides, caterpillars, snails, &c. The culinary department of the garden will require nothing more, in the summer season, than to be kept clear of weeds; and, in the winter, a dressing of manure. All this may be done by the man-servant necessarily kept for the horse, with the direction and assistance of the occupier himself, and the female part of his family; with the exception of mowing the grass, which, during the summer months, will require one day's work of a jobbing gardener every fortnight; and during the spring and autumn months, once every three weeks. This is supposing that the fallen leaves in autumn are swept up every two or three days by the man-servant, or some one of the family ; in performing which operation, in this garden, as in every other, a soft birch broom must be used, so as not to raise and sweep away the gravel from the walks. The mown grass, the prunings, the weeds, and the leaves, and such like refuse, may be thrown under the pit among the horse dung, so as to increase the quantity of fermentable matter, and thus to keep up a constant heat in the pit. The walks should be rolled at least every time the grass is mown ; and, every three or four years, that part of the surface of the gravel which has become black should be removed, and the remainder stirred up, fresh gravel added, and the whole rolled with a heavy roller, till it has become as hard as a surface of pavement. The articles grown in the pit may be cucumbers and melons, the management of which will be given hereafter; or it may be used for raising and protecting pelargoniums (geraniums), or such other green-house or pot plants as the lady of the house may prefer. Gourds may be raised in the pit, and planted between the asparagus beds, so as to yield a supply, during the whole summer, of a very delicious vegetable. If there is any room against the side wall that faces the south, tomatoes, previously brought forward in the pit, may be planted against it, and trained so as to ripen their fruits, which are excellent, either plain boiled, or made into sauce. A row or two of scarlet runners may also be planted between the beds. The total expense of managing such a garden need not exceed rom 3*l.* to 5*l.* a year.

158. *Remarks.*—Such a garden is well calculated for a person of taste, who

gets his chief supply of culinary vegetables from a market-gardener or a greengrocer. It will look well with very little care and keeping; more especially if a due attention be paid to give sufficient room to the arbutus, the laurustinus, the autumn-flowering mezereon, and other winter-flowering shrubs; and the Cydònia japónica, the common mezereon, and the *Ribes* sanguíneum, double-blossomed furze, and other spring-flowering shrubs. The dying off of the foliage of so many kinds of trees and shrubs in autumn, and their expanding foliage in spring, will produce a great variety of tints; exhibiting every morning something new, refreshing, and delightful to the lover of picturesque beauty, even if he should be no botanist. In this garden, as actually existing, all the trees and shrubs are named with zinc labels, suspended from their branches with metallic wire. The zinc is in pieces about 1 in. broad and 3 in. long; not painted, but written with a prepared ink; and, in addition to the scientific and English names, the native country of the plant is added. Such labels, the wire included, cost little more than one farthing each; and they may be easily procured from any of the London seedsmen; they add greatly to the interest of the garden, and have a tendency to give young persons a taste for plants.

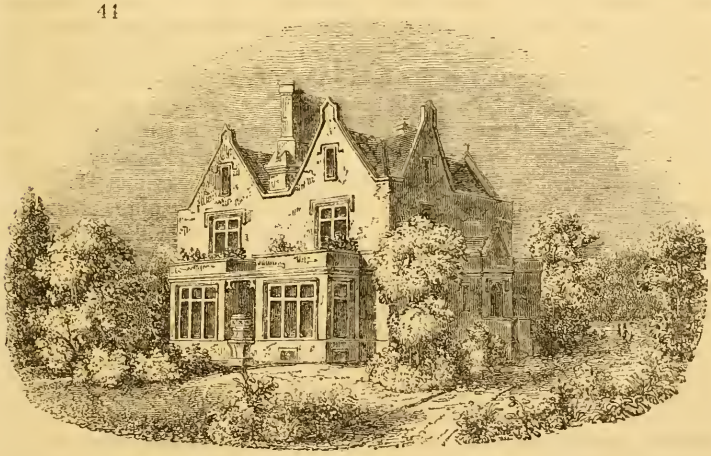
43



DESIGN VIII.—*A double suburban villa, with an ornamental garden, and the entrance porches at opposite sides.*

159. *General arrangement.—Fig.* 43. shows a common, and at the same time an effectual, mode of arranging and placing the entrances of two small suburban villas, so as to make them have the appearance of a single house. In this case, a square building, containing two houses, is entered by porches at opposite sides; and there are back entrances to each house, communicating with the area, and the garden behind each. The space in front of the houses is divided by a wire fence in the centre; so that a stranger entering from the street, and proceeding towards either house, sees across the whole width of the front garden; and both the houses and gardens appear to him to be one, and to be occupied by the same family. We have shown in this figure how shrubs and low trees may be distributed so as to aid this illusion. Each house contains an entrance-porch and staircase (*a*), dining-room (*b*), and drawing-room (*c*), with a recess, which, in Elizabethan houses, is called a bay (*d*), communicating with a small closet. Between the two houses there is a pedestal and vase, as indicated at *e;* and on the lawns (*f*, *g*, *h*, *i*, and *j*) there are no flower-beds, but only flowering shrubs and low trees: *k* and *l* are verandas; *m*, the sunk area, communicating with the walk by steps, and leading to the door of the back kitchen; and *n* shows the descent, by a few steps, from the veranda to the garden. The style of these houses, designed for us by E. B. Lamb, Esq., is supposed to be the Elizabethan; and *fig.* 44. is a perspective view, showing the front of both houses next the road, and the entrance front of one of them.

44



160. *The object in laying out and planting* these gardens we shall suppose to be a display of choice low trees and shrubs, but planted in such a manner as not to require much expense in keeping the garden in order. Flowering plants we shall imagine to be altogether dispensed with, except some in pots (which may be grown in a reserve ground, or supplied for a fixed yearly sum by a commercial gardener), for placing in the balconies over the bays, and under the verandas. The adjoining gardens we shall suppose to be planted much in the same manner; or, indeed, in any manner, provided a few trees,

either fruit-bearing or ornamental, are sprinkled through them. Such gardens will not be offensive to look at, especially through a foreground of low trees; and, hence, it will not be necessary to proceed on the supposition that much requires to be planted out, that is hidden or partially concealed by trees. The ground being drained and levelled, and properly trenched and manured, the walks may be blocked out; but the gravel or the pavement should not be laid for a year; unless, indeed, the walks are formed of pavement laid on stone piers.

161. *Planting.*—We would first plant common ivy against the exterior boundary wall, but not against the wall which separates the two back gardens. This ivy, if of the common kind, will require no farther attention whatever; but, if giant ivy be planted, it will require nailing, especially when it reaches the coping of the wall, as its claspers do not adhere nearly so well to brickwork as the common ivy. Against the wall which separates the two gardens we would plant evergreen and deciduous magnolias, *Ceanòthus* azùreus, Photínia serrulàta, Stranvæ̀s*ia* glaúca, Eriobótrya japónica, Mahòn*ia* fasciculàris, and M. *Aquifòlium*, &c.; *Jasmìnum* revolùtum; *Cydònia* japónica (not because it requires a wall, but because, if the blossom buds are picked off before expanding during summer, the plant will continue in bloom all the winter); Chimonánthus frà̀grans; the Banksian, Macartney, and other evergreen roses; and various climbers and twiners, such as the fragrant Chinese and Japan honeysuckles, perpetual-flowering roses, wistaria, tecoma, passiflora, &c. If the direction of the wall be north and south, then these kinds may be placed on both sides of it; but, if it should be east and west, then the more tender plants should be placed only on the south side. It may be observed here, that many trees and shrubs, which are considered somewhat tender, thrive better on the north side of a wall than on the south side, provided they are planted in dry soil, not too rich. The reason is, they are not so soon excited by the action of the sun in spring, and consequently not so liable to have their buds and young shoots injured by spring frosts. On the other hand, from the want of sun to ripen their fruit in autumn, they are more liable to be injured by the frosts of that season; but this evil may be greatly lessened by keeping the soil pure and dry, which will prevent the plants from making long succulent shoots, which can only be ripened by the full influence of the sun. All the plants above named, with the exception of ceanothus and eriobotrya, will succeed perfectly in a northern exposure, if the border be properly prepared with sand and lime rubbish, and the subsoil rendered thoroughly dry. Immediately within the exterior boundary walls of both gardens, we would plant a row of low-growing evergreen trees, at regular distances, among which we would include all the variegated hollies (unless these were abundant in the adjoining gardens), the box, the arbor vitæ, the common cypress, the red cedar, and, in some places, the evergreen and Lucombe oaks, and the cork-tree. These trees, after they have grown 2 or 3 feet higher than the wall, will form, from the windows of both houses, a foreground to the exterior scenery; and, therefore, in planting them, the tall and broad-headed kinds, such as the evergreen and Lucombe oaks, ought only to be planted where there is something to conceal; and the tall narrow-growing kinds, such as the common cypress, the arbor vitæ, &c., where the exterior objects are required to be only slightly disguised. Where the objects beyond the boundary are such as may be looked on at all seasons with

pleasure, such as trees, shrubs, or turf, then trees of low and slow growth may be employed instead of the larger ones, such as the arbutus, the myrtle-leaved box, &c. Within this outer boundary of trees, the ground may be sprinkled with evergreen and deciduous low trees and shrubs, in the manner indicated in the plan; none of these shrubs being planted in large masses, so as to require large breadths of dug soil; but in small groups, and nothing done to the soil round them, except preventing the grass from growing on a space about 1 ft. in diameter round the stem of each tree or shrub. This will prevent the grass from injuring the plants while young; and, what is of great practical importance, prevent the risk of injury to the tree or shrub, from the scythe of the mower. In a few years, when the shrubs have acquired strength, the grass may be allowed to spread as near to their stems as the closeness and shade produced by their branches will admit. It will be observed, that, though we recommend keeping a naked space round each plant for several years, till it has acquired sufficient strength, we by no means recommend digging this space, except in the case of standard roses, for the more tender kinds of which digging is necessary for the sake of applying manure.

162. *Laying down in grass.*—After all the trees and shrubs are planted, the whole garden may be laid down in grass; the surface having been previously consolidated and raked quite smooth. If the trees and shrubs have been planted properly each plant will stand on a small hillock, which, for the lowest-growing shrubs, should not be less than 6 in. high, and 2 ft. broad at the base; and, for the larger shrubs and trees, not less than 1 ft. high, and 4 ft. wide at the base. On these hillocks no grass seeds should be sown; and this, besides being better for the trees, by preventing their roots from being exhausted by the grass, will save much trouble in their after management, by rendering all clipping unnecessary. When trees and shrubs are thickly scattered over a lawn, only the glades of grass can be mown with the scythe, while that in the crowded parts is obliged to be clipped, either by a person using hedge-shears and kneeling while he performs the operation, or by using grass-shears and standing. Either of these operations is very hard and disagreeable work; and they are rendered quite unnecessary by the hillock manner of planting, and by not sowing the hillocks with grass. This hillock manner of planting will not, probably, be approved of by many practical gardeners, and especially jobbing gardeners, who have been accustomed to finish their planting by rendering the surface round the plants quite level. Our readers, however, may rely on its being by far the best mode for the plants; since both nature and experience teach us that nothing is more injurious to vegetation than having the collar, or base, of the stem, which ought to be above ground, placed under it, and covered with soil to the depth of 2 or 3 inches. Independently altogether of the use of these hillocks (which, in form, ought to be broad and flattened, and have concave sides uniting imperceptibly with the level surface all round), their effect in giving height and consequence to the plants on them, and the variety which is produced in the play of lines on the surface of the turf, ought to be an additional recommendation. The expense of this mode of planting can be no greater than that of the ordinary mode, except that, in some cases, stakes may be required to tie the plant to, for two or three years; which, in the ordinary mode of sinking the stem in the soil, may be dispensed with. We shall not obtrude on the reader

a list of the trees and shrubs for this garden, as from those we have already given he must be able, in some degree, to make a selection for himself.

163. *Expense and management.*—Supposing the length of the back garden to be 150 ft., the soil moderately good, and the subsoil such as not to require much drainage, the expense of laying out, and blocking out the walks, may be 20*l.* or 25*l.* The number of trees and shrubs required, exclusive of the ivy, may be 250, at the average price of 2*s.* each. The ivy, the grass seeds, and other expenses, may amount to 5*l.*; so that the total expense of laying out and planting each garden, exclusive of purchasing and laying in the gravel in the walks, may amount to between 55*l.* and 60*l.* If trees and shrubs were purchased which averaged 1*s.* each, the sum would be reduced to from 40*l.* to 50*l.*; or, if the average of the trees and shrubs were 6*d.* each, then the total would be reduced to from 35*l.* to 40*l.* The expense of management, exclusive of taking care of the plants in pots, would be very trifling. If the walks were paved, nothing more would be required than mowing the lawn, clipping the edges of the grass along the walks, sweeping up leaves, and cutting off decayed flowers or dead twigs, all which need not cost more than 5*l.* a year; and for a similar sum a commercial gardener would keep the veranda stocked throughout the year with boxes of mignonette, and supply a succession of plants in flower, during the summer months, for the balcony.

164. *Remarks.*—These gardens are well adapted for persons who take no pleasure in seeing the operations of gardening going forward, and who are rather annoyed than otherwise at meeting a gardener in walking round their grounds. Some, also, object to having a gardener, or any strange man, coming about the house; and in this case there would be as little of that as there could possibly be in any garden where a handsome display was to be made. The mowing, and all the operations required for these gardens, might be performed in the mornings, between six and eight o'clock.

DESIGN IX.—*To lay out a double suburban villa, with an ornamental garden, the entrance-porches being close together.*

165. *General arrangement.*—In small houses like those before us, this is a considerable advantage, in saving the time of servants in opening the street-entrance, and one which will be particularly felt, if the occupier of the house should be a professional man; such as a medical practitioner, a solicitor, or the holder of any parish or public office, &c. The present design is also well adapted for a person wishing the one house to be occupied as his office, and as the residence of his principal clerk, and the other to be retained as his own residence. By such an arrangement, he would have all the advantages of a large house; while he would only pay the Government and parochial taxes for two small ones. Thus, there need not be more than nine windows in each house; which, for the two houses, would cost two guineas per annum; while, for eighteen windows in one house, he would pay nearly 5*l.* per annum. In *fig.* 45. (which is to a scale of 20 ft. to an inch), *a a* are the front entrances; *b b*, the entrances to the double porch; *c*, the entrance to one of the houses; *d*, the hall and staircase; *e*, living-parlour; *f*, drawing-room; *g*, front lawn, with small circular beds for growing dahlias; *h*, side lawns, with circular flower-beds; *i*, lawns in the back garden, with flower-beds; *k*, walk which separates the lawn of the back garden from the part devoted to culinary vegetables; *l*, recess for the garden roller, or for a seat. The apartments corresponding to *e* and *f* in the adjoining house may be a surgery and

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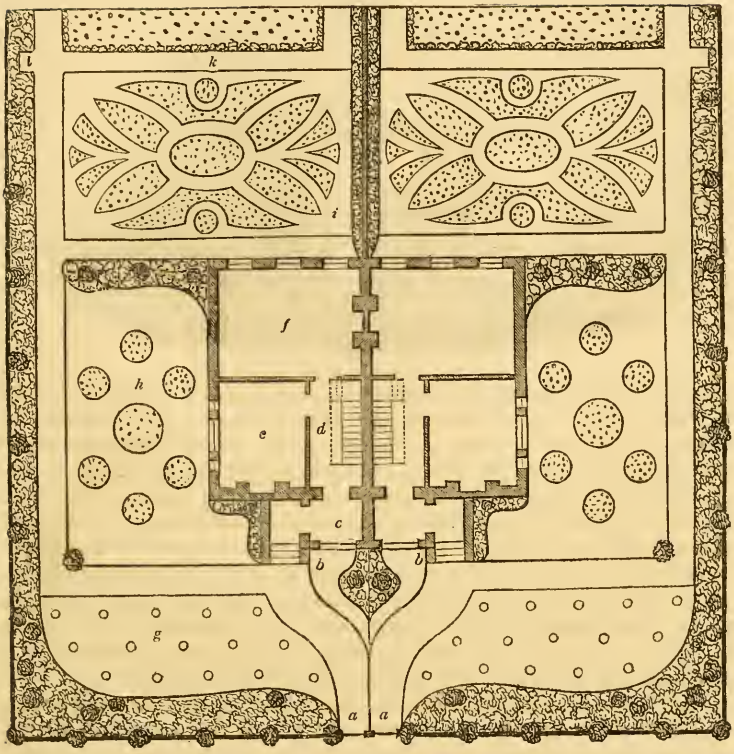

consulting-room, if occupied by a medical practitioner; or a clerk's office and a master's office, if occupied by a solicitor. In this case, both houses being, as it were, occupied by one family, the wire fence separating the two entrance walks, and the group of evergreens in front of the centre of the porch, are unnecessary; and they have been, accordingly, omitted by Mr. Lamb, in the elevation to this plan (*fig.* 46.).

166. *Planting the garden.*—The front and side boundary walls, and the party fence which divides the two back gardens, are supposed to be planted with ivy; and the margins within the side and front boundary walls with laurustinus as an undershrub, and with different species of *Cratæ'gus* as trees; as far as the culinary part of the back garden, or as far as the reserve ground, according as the taste of the occupier may be for verdant walls during winter and summer, or for fruit trees. The reason for this mode of planting will be hereafter given.

167. *In the front garden, g* in *fig.* 45. shows small circular beds (which may be from 1 ft. to 1 ft. 6 in. in diameter) on turf, at regular distances, for containing a few select dahlias, neatly trained to stakes. Instead of dahlias, any other tall-growing plant with showy flowers might be substituted; and the best of these would be chrysanthemums, provided the situation were

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exposed to the south, the soil warm and dry, and the chrysanthemums brought forward in pots, so as to commence flowering in August. In situations not adapted for chrysanthemums, Lavátera arbòrea, Lupìnus mutábilis, Œnothèra biénnis, Persicària orientàlis, and various other tall-growing flowering plants might be substituted. The object of this mode of planting is novelty; that is, to produce a kind of display which is at present seldom, if ever, to be met with in front gardens. For the same reason, standard roses might be substituted for tall-growing herbaceous plants; or standard rhododendrons, mixed with standard azaleas, might be used; or, where there was a large pit in the reserve garden, fuchsias, brugmansias, or pelargoniums might be preserved in it through the winter, for filling the beds during summer; or a green-house or hardy twiner or climber might be planted in each bed every spring. Even the scarlet-runner and the common nasturtium, when neatly trained to stakes, will form most ornamental plants; continuing to flower for a whole season, while their fruit, also, is of use. Lophospermums, maurandyas, eccremocarpus, Convólvulus màjor, &c., are most ornamental climbers or twiners, and very suitable for the purpose in view.

168. *The groundwork of the side gardens* is also turf, varied by circular beds of greater diameter than those of the front garden, and symmetrically disposed. These beds consist of a centre bed, 6 ft. in diameter; and six smaller beds, each 4 ft. in diameter. In each of the latter, one kind of annual or low-growing perennial may be planted, so as to cover the entire surface of the bed; and in the centre bed there may either be a collection of herbaceous plants of low growth, and with an equal number of the common colours, for flowering in every floral month, or China roses may be substituted: or, to give a greater latitude to choice, and to include some of the cheaper modes with others that are more expensive, one or other of the following methods of planting may be adopted:

1. Sow each of the six small beds with one of the Californian annuals mentioned in the list at the end, and the centre bed with mignonette; with Zauschnèria Califórnica, or some other very showy plant, in the centre.

2. Plant the beds with greenhouse plants every spring, one kind in a bed; the kinds to be raised in the reserve garden, or procured from a commercial gardener.

3. Plant all the beds with evergreen perennials; each plant to be kept perfectly distinct. Those for the centre bed may be *Saxífraga crassifólia*, which is as valuable among evergreen herbaceous plants as the holly is among evergreen shrubs. The other beds may be filled with different species of evergreen saxifrages; or, what would look better in winter, with carnations and picotees in two opposite beds, and pinks and sweetwilliams in the four others, disposed symmetrically; that is, the two beds of sweetwilliams being placed opposite each other, and the pinks in the other two beds; or the centre bed might be filled with wallflowers, and the others with different kinds of stocks.

4. The beds might be planted with low evergreen under-shrubs, which would look well at every season of the year. For example, the centre bed might be filled with rosemary; and the surrounding beds with lavender, sage, hyssop, winter savory, and thyme. These plants would serve, at the same time, as sweet herbs. Or the centre bed might be filled with *Cístus créticus*, or any low-growing cistus, and the surrounding beds with helianthemums of different colours: or the centre bed might be filled with *Ibéris* sempervìrens, and the surrounding beds with alyssum, arabis, aubrietia, vesicaria, cardamine, and barbarea.

5. The centre bed may be occupied by a cone of climbing roses; the cone to which the plants are trained being formed by a circle 3 ft. in diameter, composed of eight rods of Kyanised wood, or cast iron, placed about a foot apart at the bottom, and brought to a point at top, about 10 or 12 feet from the ground, and there tied together by wire. One kind of rose may be planted at the foot of each rod, and trained to it; and some of the kinds ought to be evergreens, so as to prevent the cone appearing bare in winter. The roses may be selected from the lists which will be given hereafter; but, in the mean time, we may suggest that some of the most free-flowering sorts are the Boursault rose, the rose de Lille, and the Queen of the Belgians; the last being a beautiful white. *Rósa rúga* is also a free-flowering and most beautiful rose. There are several varieties of evergreen roses, one of the finest of which is the triomphe de Bollwyller, which has large and fragrant flowers. The surrounding beds may be planted with dwarf China roses; or with the rose des quatre saisons; or entirely with Lee's crimson perpetual, one of the most beautiful roses grown.

6. The surrounding beds may be planted with Fúchs*ia* globòsa, which, though it dies down to the ground every winter, comes up again the following spring, and flowers most luxuriantly all summer; and the centre bed with Fúchs*ia* microphýlla, which is a hardy evergreen, and does not die down during winter; or with F. díscolor, which, though it is not an evergreen, is quite hardy.

169. *Where there is a reserve garden* it would be easy to keep the beds in full beauty during the whole summer, by taking up every plant as it goes out of flower, with a ball of earth attached (for which there is an appropriate tool, called a transplanter), carrying it to the reserve ground, and bringing back a plant in flower, with a ball of earth attached, to supply its place. If the plants are grown in large pots, the labour of taking up and replanting will be considerably lessened, and the success rendered certain, though there is something extremely interesting in removing plants in full flower by the transplanting machine, and watching the result. We have known persons, who

have had no love for gardening or plants, so captivated by this operation, as to practise it for the sake of the excitement it produces; and such persons have ultimately become enthusiastic florists. When successional culture, whether by pots or the use of the transplanting instrument, is pursued, the beauty and gaiety which may be displayed in even a very small garden is astonishing; and not less so the amusement and exercise that are by this means created for the occupier. The exercise, indeed, may be increased or diminished, according as the plants chosen are those which remain a long time, or only a short time, in flower. Some plants of great beauty, such as the scarlet verbena, continue blooming three or four months; but others, also of very great beauty, such as the cyclamens, produce all their flowers in the course of a fortnight or three weeks. The choice of flowers for regular flower gardens is almost endless, but selections may easily be made from the lists in the last book of this work.

170. *Planting with fibrous-rooted perennials of the lowest growth.*—The whole of the plot is dug; and the borders surrounding it, and the beds, are edged with thrift, or sea pink (Arméria vulgàris), and the walks gravelled. If paved, the flagstones should be laid hollow, and supported on piers, in order that the space beneath may serve as a drain for absorbing the water which falls on the beds, and also on the walks. The surface of the soil of the beds we may suppose to be 2 in. below the surface of the walk, and quite flat.

171. *Planting with fibrous-rooted perennials and bulbs alternately.*—The advantage of introducing bulbs in flower-gardens is, that their flowers make a greater show than those of fibrous-rooted plants generally do in spring; and as, in small suburban residences, it seems more desirable that the gardens should look well in spring than in summer (because at the latter season many families go out of town for a few months), the use of bulbs appears very desirable. The manner of introducing them may either be in beds by themselves, to be succeeded by fibrous-rooted plants when they go out of flower; or intermixed with fibrous-rooted perennials, by using only half the number of the latter, and those of larger growth; and by placing the bulbs and the perennials alternately. As the bulbs come all into flower in March, April, or May, they will have faded before the perennials have come to their full growth; and hence, notwithstanding the increased size of the perennials, the bed will not appear crowded.

The advantage of this mode of planting is, that a much greater show will be made in the months of March, April, and May; because, as already mentioned, the flowers of bulbous-rooted plants are much larger in proportion to the foliage than those of fibrous-rooted plants. The flowers also are much more conspicuous; because, in general, they expand before the leaves have attained their full size. On the whole, however, the culture of bulbs in mixture with perennials is inconvenient; except when florists' bulbs only are employed, that come into flower and fade all about the same time, and the bulbs of which may be taken up annually in June or July, and replanted in November or December. This admits of taking up the perennials every year, or every other year, stirring, refreshing, or renewing the soil, and pruning or otherwise reducing the plants, and then replanting them. On the other hand, if what may be called botanical bulbs were introduced, as these are best allowed to remain in the soil for several years, the perennials cannot be so conveniently taken up, reduced, and replanted, when they get too large.

Another reason against intermixing permanent bulbs with perennials is, that the moisture required during summer to keep the fibrous-rooted plants in vigorous growth, has a tendency to rot the bulbs, they being at that time in a dormant state, and, in their native habitats, comparatively dry; almost all bulbs being natives of countries which have alternate seasons of drought and moisture, and flowering only in the latter. The best florists' bulbs to intermix with perennials are the different varieties of the common hyacinth, the crocus, the tulip, and the narcissus.

172. *Planting with showy green-house plants, which are common and cheap.* —According to this mode of planting, pelargoniums, fuchsias, verbenas, calceolarias, &c., are purchased in May or June, and planted in the ground, where they are left to grow till killed by frost in October or November. If bought in large quantities when young, these plants may be had at 3*s.* or 4*s.* per dozen.

173. *Planting with biennials and annuals, to be followed by green-house plants.*—The flowers of these gardens may consist solely of biennials, which require to be sown every two years; or of annuals, which must be sown every year; or there may be a mixture of these two kinds. The advantage of biennials is, that they are generally plants of great bulk (such as the hollyhock, which is one of the most splendid of biennial plants), and, consequently, few are required for a considerable space; and the disadvantages are, that the first year of their growth no blossoms are produced; unless, indeed, they are transplanted from a reserve ground, in which case they never flower so strongly as when allowed to remain where they are sown, unless a pit about a foot or 18 in. square is prepared for them and filled with rich soil. Their large size renders them, in general, unfit for small front gardens, unless we except an occasional hollyhock, Canterbury bell, French honeysuckle, marvel of Peru, &c.; or unless the occupier should prefer temporary bulk and show, to permanent and more minute beauty and variety. The advantage of annuals is, that they occasion little trouble in cultivating the ground; because, as the greater part cease flowering at the commencement of frost, they may be then removed; and the ground, being dug, will require nothing further to be done to it till February, when a fresh supply of annuals may be sown; or till March, when, if annual plants are purchased from a commercial gardener, or brought from a reserve garden, they may be planted. The disadvantages of using annuals are, that the ground is naked during winter, and that there are among them no early spring flowers; with the exception of the Californian kinds, such as Calliópsis, Collínsia, Gília, Clárkia, Eschschóltzia, Nemóphila, and others, which, if sown in September, will stand our ordinary winters, and flower in May. Other disadvantages of annuals for a small garden are, that many of the common kinds are rampant, straggling, weedy-looking plants, especially when sown in patches, and not thinned out; and that there are but few of them, such as the mignonette, which continue in flower all the summer. Some, indeed, as the China aster, require the whole summer for their growth, and only come into flower in the autumn. Annuals, therefore, are not well adapted for making a perpetual display in a very limited spot of ground; though many of them, especially the dwarf and trailing kinds, such as Eschschóltzia, Clárkia, Gília, Nemóphila, Anagállis, &c., make a very splendid show during the time that they are in flower.

174. *The back garden* may be laid out in beds of flowers or grass, as shown

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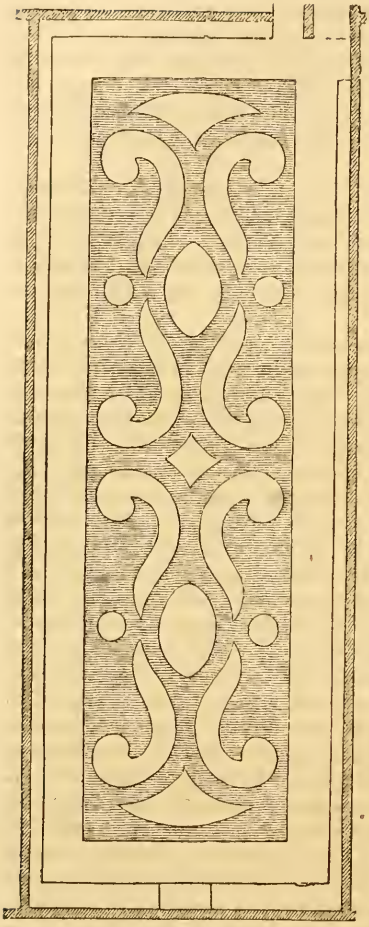

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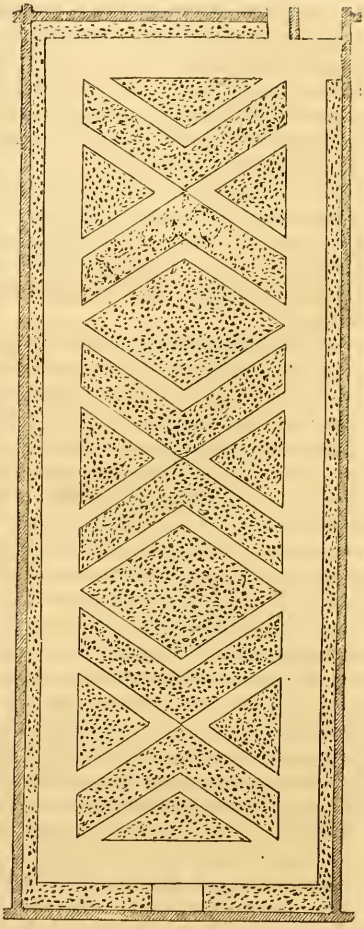

in *fig.* 47., or in beds bordered with box, and intersected by narrow paths of gravel, as shown in *fig.* 48. *Fig.* 47. might be planted with Fúchsia globòsa, the different kinds of mimulus, Frogmore pelargonium, dwarf roses, heliotropes, particularly the beautiful new Heliotròpium Voltaireànum, petunias of various shades, cupheas, verbenas, Genísta bracteolàta, and Cýtisus racemòsus.

DESIGN X.—*To lay out and plant a small suburban garden, where the object is to have a green-house, or to force fruits and flowers.*

175. *General arrangement.*—Wherever plant-houses, pits, or frames, are introduced into suburban gardens, unless these are to be kept in order, and supplied with plants, &c., by a commercial gardener residing in the immediate neighbourhood (by far the cheapest mode), it will be found necessary to have a small portion of the garden separated from the rest as a reserve

ground. In this space the proper soils and manures may be kept, a dung-bed for bringing forward plants, or a pit for the same purpose, and for forcing cucumbers, growing melons, &c. It is also necessary, wherever plants are grown under glass or kept in pots, that this reserve ground should have a back door, or communication with a public road, otherwise than through the house, for the supply of dung for hot-beds, soils, fuel, and other articles required. The possession of a cucumber or melon frame adds greatly to the interest of every suburban garden; and there need scarcely be one, however small, without it; for, on a small scale, where there is only one bed, if there is no back door, the dung may be carried through the house in baskets. On a larger scale, dung, except as manure, may be dispensed with; and the heating of cucumber-frames and pits effected by flues, or, what is greatly preferable, by pipes of hot water. Wherever there is a green-house, it ought, if possible, to be connected with one of the living-rooms of the house; and it might frequently be so arranged, that in a vault or cellar underneath this green-house, rhubarb, sea-kale, chicory, and other vegetables that are eaten in a blanched state, might be forced; or mushrooms grown throughout the year. When this is attempted, however, there ought to be no communication between the cellar and the green-house; nor any openings in the former that will admit the air from it into the living-rooms; such air being always over-charged with moisture, and having generally an earthy disagreeable smell. Some possessors of suburban gardens have a taste for forcing different kinds of fruit, more especially grapes and peaches; and some even might wish to grow pine-apples. All this may be effected in a suburban garden almost as well as farther in the country; because the operator has a greater command of the air enclosed by the glass case, than he has of the exterior smoky atmosphere; and, however paradoxical it may seem, it would be easier to grow a good crop of pine-apples under glass in a back garden in Cheapside, than it would be to produce a good crop of grass in the open air in the same garden, or to keep there a smooth closely-covered turf. The principal consideration with respect to forcing-houses in small suburban gardens is, the difficulty of placing them so that they shall obtain the full influence of the sun, from its first appearance in the morning till sunset. Even in large suburban gardens in large towns, it is next to impossible to accomplish this, from the proximity of houses that either prevent the morning sun from shining on the glass so soon as it otherwise would do; or, what is still more injurious, that intercept its rays between two and four o'clock in the afternoon, during which period, in towns, they have generally, from the comparative clearness of the atmosphere, the greatest power. Trees, also, in adjoining gardens, are often very injurious; and there is yet another drawback, which is the road dust, and small particles of soot, which, in dry windy weather, are floating in the atmosphere, and, settling on the glass roof, lessen the quantity of light that penetrates it. All these circumstances ought to be taken duly into consideration, before the occupier of a suburban garden ventures to erect forcing-houses for ripening fruits.

176. *The green-house.*—Whatever may be the aspect of the house, a green-house may be projected from it, unless it be due north; and even in that case there are many exceptions. We shall take the same extent of ground that has already come under consideration, and shall suppose a green-house projected from the living-room, as shown at *c*, in *fig.* 19.; in which *a* is the

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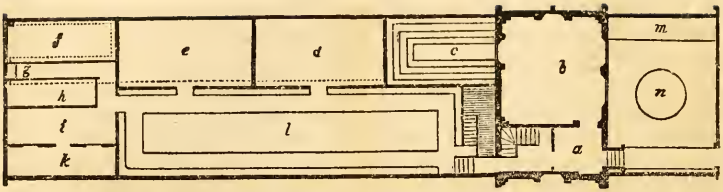

entrance-hall, and *b* the principal living-room. Underneath the green-house there is a vault, in which is placed the furnace; and from a boiler over it hot water pipes are conducted up into the green-house, where they are concealed behind the shelves, or stage, on which the pots stand. In the vault, various articles which require little or no light may be forced, as already mentioned. The communication between the green-house (*c*) and the living-room (*b*) is by a glass door, the view through which, from the room, is along the front of the stage, and, consequently, brings into perspective all the finest plants. Plans of green-houses will be given hereafter.

177. *Pits, frames, and the reserve ground.*—At the lower end of the garden, a space is shown, walled off, in which pines and melons may be grown in pits, either heated by dung or by hot water; and here, also, cucumbers, and roses and other flowers, and rhubarb and other culinary articles, may be forced at pleasure. One fire-place and boiler, centrally placed, will, with ease, heat all these pits and frames, even if they were of three or four times the extent we have supposed them to be. Plans for such pits will be given hereafter. In the ground plan, *fig.* 49., the boiler is supposed to be placed beneath the green-house (*c*); and pipes conducted from it, as indicated by the dotted line, will pass through and heat the vinery (*d*), the general forcing-house, or stove (*e*), the small pit (*h*), the propagating box (*g*), and the pine pit (*f*). There is a place for compost at *i*, and a potting-shed at *k*. The long bed (*l*) in front of the houses is supposed to be in turf, or devoted to exotic flowers and shrubs kept in the forcing-house and vinery in the winter season, and turned out during summer. The enclosure containing the pits will also serve for a reserve ground for bringing forward articles proper for decorating the green-house, and for containing soils, composts, pots, and various articles. The potting-shed is used for shifting and potting in, and for other operations required to be performed with house plants; and also for containing the pots, tools, &c. Without an appendage of this kind, no green-house can ever be made to look well for any length of time together; for some of the plants require to be removed as soon as they have left off flowering on account of their unsightliness; others become too large and straggling; some get diseased, and others die altogether; so that a reserve ground, with a pit or frame in it, is absolutely necessary, as an hospital, to renovate plants that are sickly or unsightly; as a receptacle for such as are in a dormant state; and as a nursery to raise young ones, in order to keep up a fresh supply of plants in full vigour.

178. *Forcing-houses.*—If these are required, we should continue them, as indicated in *fig.* 49., from the end of the green-house towards the reserve ground, as shown at *d* and *e*; and, if this were done, the same fire which heated the green-house, might, as already mentioned, heat the forcing-houses

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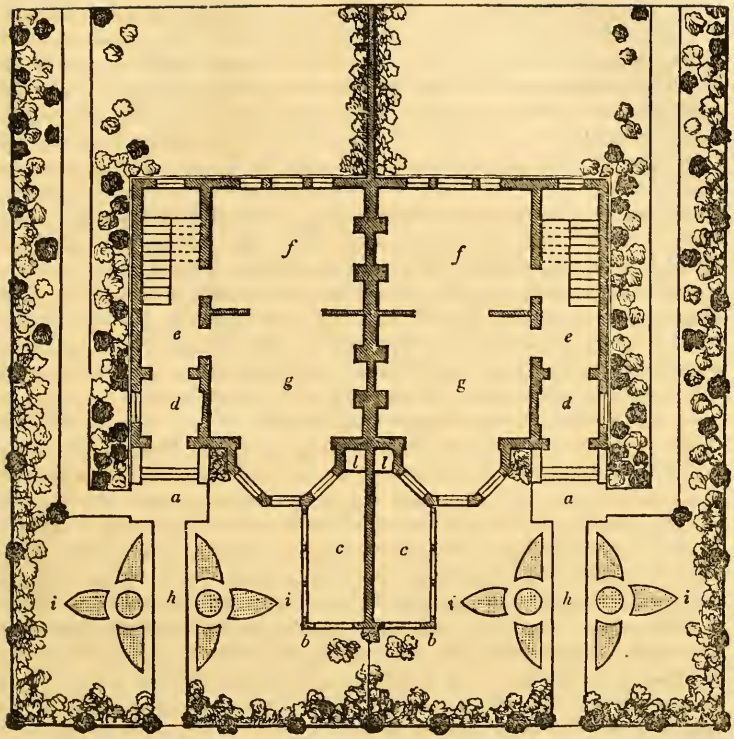


also. This is easily done by having a separate set of pipes for the green-house, the circulation of the water in which can be stopped whenever heat is not wanted there. The fire-place being in a vault beneath the green-house, there would be no danger of its ever communicating more heat through the green-house floor than what would be salutary for the plants. Indeed, by forcing culinary productions or growing mushrooms in the vault, and having the green-house over it, scarcely a particle of heat generated by the fuel would be lost. The forcing-houses, in a suburban garden of this kind, cannot, in general, be made higher than the party-wall of the garden; because this would be to produce a greater shade on the adjoining garden than would be submitted to by its occupier; whose permission would be necessary even to raise the green-house, so that its floor might be on a level with that of the sitting-room.

179. *A small suburban garden*, like that shown in *fig.* 49., with the wall having a south aspect covered with glass, with two small forcing-houses, and a reserve garden with pits and frames at the end, would require a first-rate gardener, or a zealous and skilful amateur, to manage it to the greatest advantage; and, in our opinion, unless it is done, it is better to dispense with glass in a garden altogether.

Management.—If the occupier intends to manage this garden himself, he must be at home every day throughout the year; with the exception, perhaps, of a month or two during summer, when his forced trees, having yielded their crops, are in a dormant state; and when he may commit the care of his reserve department, and of his green-house, to a commercial gardener in the neighbourhood. If he employs a gardener, it must be one who thoroughly understands his profession, and who is so decidedly steady and regular in his habits, that the utmost confidence may be placed in him. The neglect, for one night, during severe frost, of the fire which heats the hot-water apparatus, or the making of too large a fire in a mild night, would be sufficient to destroy a whole crop of either peaches or grapes. For this reason, not only a remarkably steady man must be employed as gardener, but one who lives either in the house, or near at hand; so that he may be able to attend the fires, when necessary, at any hour of the night. Even during the day, there is great danger of overheating forcing-houses, either by sun heat alone, or by the joint effect of sun heat and fire heat; so that in the day time the occupier or his gardener will require to be as vigilant as during the night.

Design XI.—*To lay out a double suburban villa, with green-houses attached.*

180. *General arrangement.*—In order to prevent both the entrances *a a* in *fig.* 50. from being seen at once, it requires a considerable projection between them, as shown at *b b;* or, instead of that projection, a mass of evergreen trees and shrubs. The projection may either be some additional conveniences to each house; or it may be a span-roofed greenhouse, with glass in front and on the sides, and separated by a wall to be covered with evergreens, such as camellias, myrtles, or oranges, as in the plan before us, at *c c.* Or, to avoid the risk of one of the occupants not paying the same attention to his green-house as the other, then, to insure a good effect from the exterior, and the proper cultivation of the plants, the green-house may be exclusively in the possession of the occupier of one of the houses, though equally looked into from the windows of both of them.

181. *The principal object* of the possessors of these houses, with reference to their gardens, is supposed to be, as the green-house would seem to indicate, ornamental display; for which reason, the ground is principally laid down in grass, and sprinkled with ornamental shrubs and low trees; the latter, as before observed, being indicated by a darker shade than the shrubs. On the supposition that the ground belonging to the adjoining houses is planted with a view to the same object, then the occupiers of the houses shown in *fig.* 50. should study to introduce species and varieties different from those in the adjoining gardens, but, at the same time, a sufficient number of the same kinds to preserve harmony in the general view of the whole, to a person passing along the street. If we suppose, for a moment, that, in one garden, small select trees, such as thorns, crabs, cypresses, &c., were planted, and in the adjoining garden large rapid-growing forest trees, such as poplars, limes, elms, &c., it must be evident that the contrast in appearance between the two gardens would destroy all unity of effect in the general view of the street; while the shade produced by the large trees of one garden, on the low and more choice kinds in the other, would so materially injure their growth as to prevent them from flowering, or being at all ornamental. "What, then, is to be done," it may be asked, "when a neighbour on the south side of our garden chooses to plant a row of poplars, so as to throw our garden completely

into the shade?" All that can be done is, either to plant large coarse trees like our neighbour, or rather still larger and more rapidly-growing ones; or to cultivate only such trees and shrubs as prosper best in the shade. Of these, one of the most valuable is the holly, of which there are twenty or thirty varieties, with very distinctly variegated leaves; all of which attain in time the size of trees, and, by the gaiety of their foliage, make a splendid appearance at every season of the year. There are also other varieties of holly which are curious; such as the hedgehog, the myrtle-leaved, and the recurved-leaved holly. Some foreign species of holly, which attain the size of low trees, might also be introduced; such as *Ilex opàca* and *I. madeirénsis*, both of which thrive better in the shade than in the sun. The yew, of which there are two very distinct sorts, the common and the Irish, will afford two other trees which, like the holly, will thrive better in the shade than in the sun; and to these may be added the box, than which, when planted singly in deep free soil somewhat calcareous, and allowed to take its own natural shape, there is not a more picturesque and beautiful low evergreen tree in the British arboretum. The tree box is picturesque, from its irregular outline, and the varied forms of the masses of its foliage; and it is beautiful from the smooth glossy green of the latter, and the graceful tendency of its lower branches, which recline on the ground. This tree, when grown in full sunshine, assumes a yellow hue, compared with the rich deep green which it has in the shade; and the same may be said, to a certain extent, both of the yew and the common green holly. Besides the common tree box, the broad-leaved and the myrtle-leaved varieties, and the variegated box, all of which attain the size of low trees, there is the Minorca box, which forms a very handsome tree; and, in addition to these trees, and others which will be found in our list of those that love the shade, there is the common laurel, which may be trained so as to assume the character of a tree, a shrub, or a hedge, at pleasure; and in each capacity there are a denseness and an appearance of comfort and gaiety in its foliage, which render this plant welcome almost everywhere. Few are better adapted for making evergreen screens, either between a front garden and the street, or between two adjoining front gardens. The privet, in like manner, may be trained so as to form a handsome small tree, an ornamental bush, or an evergreen hedge. The common arbutus, of which there are two very distinct varieties, also forms a very handsome low tree. For shrubs that delight in the shade, it is only necessary to mention the whole families of rhododendrons, azaleas, mezereons, and some of the evergreen daphnes. In the most shady part of the garden, against the walls, where nothing else will grow, the gold and silver ivy will produce a most brilliant effect; but, as both are weaker and more slowly growing plants than the common and the giant ivy, care must be taken that they are not overpowered by these kinds. With respect to rhododendrons, azaleas, mezereons, &c., the different species of these genera, with their varieties, are of themselves enough to fill a shady garden with a display of evergreens in winter, and splendid flowers in summer. We shall not enumerate any other plants adapted for shaded gardens, those above-mentioned being enough to show that the possessor of a garden shaded by the trees of his neighbours, though unable to grow some of the finer kinds of trees, has still ample resources left for ornamenting his grounds. Among herbaceous flowers, there is still more ample choice: for example, in annuals

alone, which will grow in the shade better than in the free air, we have only to point to the lists of Californian plants given in this work. *(See Index.)*

182. *Planting the front garden.*—To return to our plan (*fig.* 50), each house consists of a vestibule (*d*), hall and staircase (*e*), dining-room (*f*), and drawing-room (*g*), communicating with the conservatory (*c*). In the garden at *h*, are shown flower-beds on each side of the entrance-walk; and these, to harmonise with the green-house, may be symmetrically planted, the two central circles with fuchsias; the two beds *i i* with variegated pelargoniums (geraniums); and the remaining four beds with scarlet pelargoniums. These will continue in bloom during the whole summer; and, in order that the beds may not every year present the same appearance, heliotropes, rose-scented pelargoniums, celsias, and calceolarias may be employed in succession; or, instead of these kinds planted in the free ground, the green-house plants may be plunged in the beds in their pots; being symmetrically arranged with regard to size and foliage, so as still to maintain the rule laid down in p. 57; viz. that symmetry of form in the beds requires symmetry in the form, colour, or arrangement, of the plants. It would, for example, be contrary to symmetry of arrangement, to plant two of these beds with green-house plants, and two with the common hardy kinds; though, by choosing plants of the same size, symmetry of form might be produced. If it were desired still further to vary these beds, they might be planted, for a year or two, with roses; a standard rose being placed in the central bed, surrounded by mignonette, and dwarf roses planted in the other beds; or the centre bed might be occupied by climbing roses trained over a cone formed by a framework of rods; or there might be an arch of iron rods thrown from one central bed to the other, across the walk, and covered with climbing roses, or with a cobœa, or some other ornamental climber. The beds may be edged with wire-work, to which mignonette may be trained; or with ivy, trained to an iron rod raised 6 in. above the surface; or they may be bordered with any very low-growing evergreen shrub, such as the evergreen iberis, thyme, &c.; or they may be edged with tiles or slates, or with cast-iron or wooden edgings. In short, these beds may be planted and edged in a different manner every year, during the whole period of a lease; and, in addition to the summer planting, they may be filled every autumn with bulbs, so as to produce a brilliant show in early spring.

183. *In the back garden*, the borders may be planted with a mixture of China roses, or of rhododendrons and azaleas, selected so as to present a bloom from April to August; with some clethras and *C*eanòthus azùreus, to continue to bloom till November; or they may be planted with a mixture of herbaceous plants and bulbs, so selected as to present some species in flower during every floral month in the year. Against the basement wall of the green-house, in this design, chrysanthemums may be planted, and carefully trained; in which situation they will flower beautifully: and against the lower part of the house *C*ydònia japónica may be planted, which, in that situation, would flower throughout the winter; while, in such other parts as did not interfere with the windows, Lonícer*a* japónica, *J*asmìnum officinàle, climbing roses, and other ornamental flowering creepers, might be planted, for their show and their fragrance. In the green-house, there ought to be vines or creepers trained on the piers between the windows, and under the

rafters; and, in summer, when the plants in pots are taken out of the green-house, these creepers ought to be removed from the piers and rafters, and trained over the windows and sashes, so as to produce a sufficient degree of shade to admit of the interior being used as a sitting-room for the ladies in the morning, or as a banqueting-room for taking the dessert in after dinner, or as a room for taking tea in in the evening. The green-house may be heated in various ways, and, among others, by a fire-place or stove at the end, as shown in the plan at *l*; but, if only the more hardy green-house plants are grown, such as camellias against the wall, and heaths and Australian plants in pots, no other heating need be required than what may be given every night after the family go to bed, by leaving open the glass door communicating with the living-room, a fire being supposed to have been kept in that room during the day. The warm air from the living-room will raise the temperature of the green-house at least above the freezing point; and some degrees higher even in the most severe weather, provided the sashes and windows of the green-house fit tightly. It would be easy to heat this green-house in a most effectual manner, from the kitchen fire, or the parlour fire, by pipes of hot water; but the tendency of contrivances of this kind, after two or three years' use, to go out of order, renders us reluctant to recommend them if they can be avoided. Underneath the green-house, on the basement floor of the house, there may be a coal or beer cellar.

The part of the back garden which is not seen may be either wholly devoted to ornamental trees and flowers, on a lawn connected with that shown in the figure; or separated from it by a border of evergreens, and cropped with culinary vegetables. In either case, a portion of ground at the bottom of the garden must be fenced off as a reserve garden, in which there must be a pit or a hot-bed, to keep up the supply of young plants for the green-house, and for the beds at *h*; unless the cheaper mode is adopted, of having this done by contract with a commercial gardener.

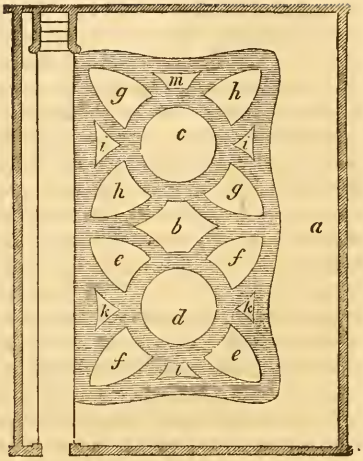
Expense and Management.—The gardens to these two houses might be laid out and planted for from 30*l.* to 60*l.* each, according to the kind of trees selected, exclusive of the reserve gardens, the green-houses, and the gravelling or paving of the walks. From their being flower-beds, if the occupiers of the houses or their servants were not attached to gardening, the assistance of a man for each garden might be required, on an average, one day in a week throughout the year; which, with the requisite seeds, plants, &c., might bring the yearly expense of management to about 10*l.* This is supposing that the watering, and other attendance required by the plants in the conservatory, were chiefly done by some part of the family.

Remarks.—These gardens are particularly well calculated for amateurs who are fond of performing the operations of gardening themselves; because there is no heavy, dirty, or disagreeable work required in them, and because the green-houses would afford recreation during winter.

184. *Planting a front garden so as to produce symmetrical masses of colour.*—An agreeable variety might be produced in this design, by substituting *fig.* 51. for *i i* in *fig.* 50. This garden is supposed to face the south; and to be 30 ft. broad, and 45 ft. long. It is surrounded by a broad border (*a*), separated from the lawn, or grass-plot, by a line, which is slightly waved, in order to harmonise it with the curvilinear forms of the beds; but, at the same time, not so much so as to be out of harmony with the straight wall and the straight

walk. These beds we shall suppose to be planted in masses of one kind in a bed; the object being to make a great display of colour from the windows of the house, and from the walk from the street entrance to the front door, and yet to preserve in the colours the symmetry shown in the forms and disposition of the beds. The border (*a*) we would plant with rhododendrons, and other low evergreens, to form a dark background to the flowers on the lawn; intermixing the rhododendrons with laurustinuses, autumn and spring flowering mezereons, and *Cydònia japónica*, for late and early flowers; and planting the wall with ivy. The border next the street may have three variegated hollies planted in it, to break the view of the street from the house; or one holly, one scarlet-flowered arbutus, and one variegated tree box may be chosen for this purpose. The border beneath the parlour window may have myrtles, camellias, maurandyas, passion-flowers, sollyas, &c., planted against the house, and some dwarf half-hardy flowering shrubs, such as escallonias, *Ceanòthus azùreus*, fuchsias, *Céstrum noctúrnum*, a dwarf fan palm, &c., planted in the border, so as to create a necessity for winter protection. We shall show different modes of planting the beds; previously noticing how statuary ornaments may be introduced in them.

51



185. *Introduction of statuary ornaments in front gardens.*—The centre bed (*b*) may have a sun-dial in the middle, rising from the base, surrounded by rockwork (the manner of forming which will be given hereafter), planted with select creeping plants; and there may be a vase for plants on a pedestal in each of the beds *c* and *d*; the pedestal being surrounded by climbers, to be trained to it, but not higher than the base of the vase. Throughout the floral months, these vases might be filled with pots of plants in flower, and throughout the winter with evergreens. The beds *e e* may then be filled with red-flowering low plants, allowing an equal number for every floral month; *f f*, with white-flowering plants; *g g*, with blue-flowering plants; and *h h*, with yellow-flowering plants. The small beds may have crocuses round their margins and in the centre mignonette. As this plant is never fragrant except in poor soil, these beds should consist almost entirely of lime rubbish, except round the margins where the crocuses were planted. Among the shrubs we would plant bulbs of as many low-growing kinds as room could be found for, but no fibrous-rooted herbaceous plants whatever. Bulbs among evergreens make a very fine appearance in spring; and, as their foliage dies off altogether in summer, they have not that littery, disorderly appearance which herbaceous perennials in shrubberies usually have when they have done flowering.

186. *Planting with bulbs, to be succeeded by showy annuals.*—Instead of

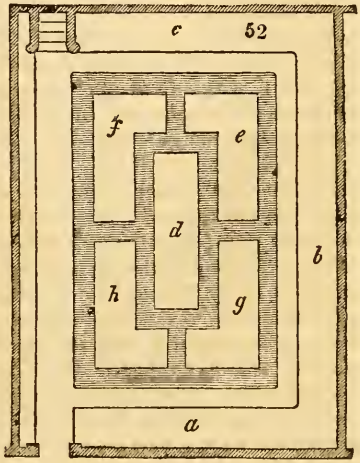
this arrangement, the three central beds might be planted with three different kinds of showy perennials, or with three different kinds of bulbs, or with three different kinds of annuals. The bulbs for the centre bed might be crocuses, as coming first into flower; and for the two others hyacinths; for the beds *e e* and *f f*, tulips; and for *g g* and *h h*, polyanthus narcissus; the smaller beds may be solely devoted to crocuses. This mode of planting would produce a fine display from March till the middle of May; when the bulbs should be taken up, and the beds, having been dug, should be immediately planted with annuals, previously brought forward to nearly a flowering state in pots. In planting these annuals, not more than one kind should be introduced in each bed; and the kinds in beds opposite should be as like in colour, height, and general appearance as possible. Thus, if one of the beds, *c*, were planted with the ten-week stock, the other ought to be planted with purple candytuft, or any similar flower that came into bloom at the same time; and, if one of the beds, *h*, were planted with Clárk*ia* pulchélla, the other should be planted with Lobel's catchfly, &c. On the whole, however, a more striking effect is produced by planting opposite beds of exactly the same kinds; and those for *fig.* 51. may be the following, it being understood that the plants are to be so close together as to cover each bed entirely; and that, whenever any gap appears in a bed, the adjoining plants are to be pegged down to cover it. For *b*, *L*upìnus mutábilis, which would produce its fine blue, white, and yellow flowers, all the summer; for *c* and *d*, German stocks in mixture, purple, red, and white; for *e e*, German larkspurs in mixture, purple, red, and white; for *f f*, new scarlet candytuft, scarlet; for *g g*, Calliópsis bícolor, yellow and brown; for *h h*, Collíns*ia* bícolor, blue and white; for *i i*, Clárk*ia* pulchélla, lilac; for *k k*, Eschschóltz*ia* califórnica, yellow and orange; for *l*, *M*álope grandiflòra, dark crimson; for *m*, *Z*ínn*ia* élegans coccínea, scarlet. All these annuals are new, and eminently beautiful; and seeds of them may be procured in most of the principal seed shops.

187. *Planting with bulbs, to be succeeded by half-hardy annuals and greenhouse plants.*—The third mode is adapted for gardens where there is not only a reserve ground, but pits or hot-beds in which to preserve some of the plants which we shall recommend during winter, and to bring forward others in spring. During winter, the beds are supposed to be filled with bulbs in the manner before-mentioned; or, what would produce a truly brilliant effect, wholly with hyacinths, and the margins of the beds with a line of crocuses. The bed *b* might be planted with mixed hyacinths, one of a sort; the beds *c* and *d*, with white hyacinths; *h h* and *e e*, with red; and *f f* and *g g*, with blue. The smaller beds might be filled entirely with crocuses. In the course of the month of May, the bulbs should be removed, and the ground dug and planted as follows:—*b*, with variegated pelargoniums (geraniums); *c*, with Bath scarlet pelargoniums; *d*, with Frogmore scarlet pelargoniums; *e e*, with *V*erbèna chamædrifòl'a *(Melíndres)*, scarlet; *f f*, with Lobèl*ia* lùtea, yellow; *g g*, with *Petùnia* nyctaginiflòra, white; *h h*, with *Petùnia* phœnícea, dark purple; *i i*, with Lobèl*ia* grácilis, blue; *k k*, with Nierembérg*ia* grácilis, white; *l*, with Nemóphila aurìta, blue; and *m*, with *S*enècio élegans fl. pl. rùber, red. All these plants are easily procured; and they may be preserved in pits or frames, with a very slight assistance, during cold and damp weather, from fire or dung heat. All of them ought to be planted so close together, as to cover the beds by the middle of July; and any shoots that rise above

6 in. from the bed should be cut off or pegged down, and any naked space that may occur on its surface should be covered by pegging down shoots from the adjoining plants.

188. *Planting a front garden with Florists' flowers.—Fig.* 52. is a front garden of the same size as *fig.* 51. in p. 122., laid out with a view to the culture of florists' flowers. The side walls should be planted with ivy; and in front, next the street wall and railing, the ivy may be trained to wires, one wire being introduced between each rail. The plants trained against the house should be select climbing roses. The borders *a* and *b* should be devoted entirely to dahlias in summer, and bulbs in winter and spring; the bed *c*, to chrysanthemums; *d*, to pinks and carnations; *e* and *f*, to tulips; and *g* and *h*, to hyacinths; the other bulbs, such as ranunculuses, anemones, &c., being grown in the dahlia borders before the latter are planted; or, if the symmetrical effect is dispensed with, tulips, hyacinths, ranunculuses, and anemones, may be grown in the beds *e f g h*. These beds, after the bulbs are removed, may be planted with showy annuals, or other plants brought forward in the reserve ground. As the foliage of the carnations and pinks, which occupy the centre bed, is evergreen, it will look well throughout the year.

52



189. *A mode of planting a front garden with ornmental green-house plants,*

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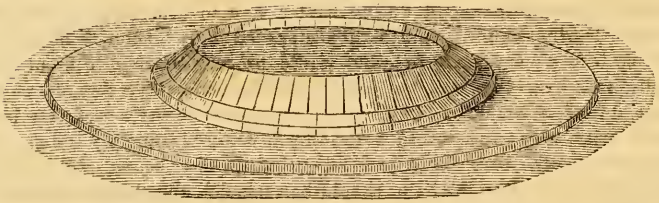

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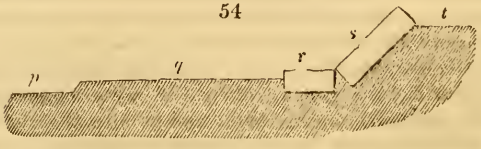

is to have a raised bed of brickwork, as shown in *fig.* 53.; and of which *fig.* 54. is a section. In this section, *p* is the surface of the lawn; *q*, a raised bank of turf, to serve as a preparation for a base to the brickwork; *r*, a circle

of bricks laid flat, and half sunk in the turf; *s*, a circle of bricks laid all to one slope, and touching with their lower edges the circle of flat bricks; and *t*, the surface of the bed. The perspective view of this bed is shown in *fig.* 53. Such a bed ought to be planted in the centre with the most choice summer-flowering green-house plants; and round the margin, with mignonette, *V*erbèna chamædrifòlia (*Melíndres*), or some other fragrant or brilliant-coloured creeper which will hang down over the bricks. A large fuchsia in the centre, surrounded by variegated pelargoniums, with a border of mignonette intermixed with blue anagallis, will have a good effect; as will a large Brugmán*sia* suavèolens (*Datùra* arbòrea) in the centre, with the surface of the bed entirely covered with the *V*erbèna chamædrifòlia, which would hang down with its brilliant scarlet flowers over the brick frame. The brugmansia (*fig.* 55.), when well-grown, is a particularly suitable plant for this purpose. It may be kept in the frame in the reserve ground during the winter; and, if turned out into rich soil, and kept well supplied with water during summer, it will produce a profusion of its fine trumpet-shaped, pure white, fragrant flowers, from June till the beginning of October; when the plant ought to be taken up, repotted, and returned to the pit, to prevent it from being injured by frost.

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DESIGN XII. *To lay out, and plant the grounds of a double suburban villa in the Italian style, with the entrances from a common terrace.*

190. *General arrangement.*—This house, of which *fig.* 56. is the plan, and *fig.* 57. a perspective view of the elevation, may either be occupied by a professional man, as in the preceding design, or by two private families. In the first case, the main entrance would be from the terrace (*d*); but, in the second, though this would be the ostensible entrance, the real entrances would be at the sides, through the green-houses, or plant lobbies (*k*).

191. *The ground plan* (*fig.* 56.) shows the main walk (*a*) from the entrance-gate to the terrace (*d*); two servants', or side, entrances, in the event of the house being occupied by two different families (*b*); stairs down to the sunk area and the kitchen floor (*c*); terrace common to both houses (*d*); open porch,

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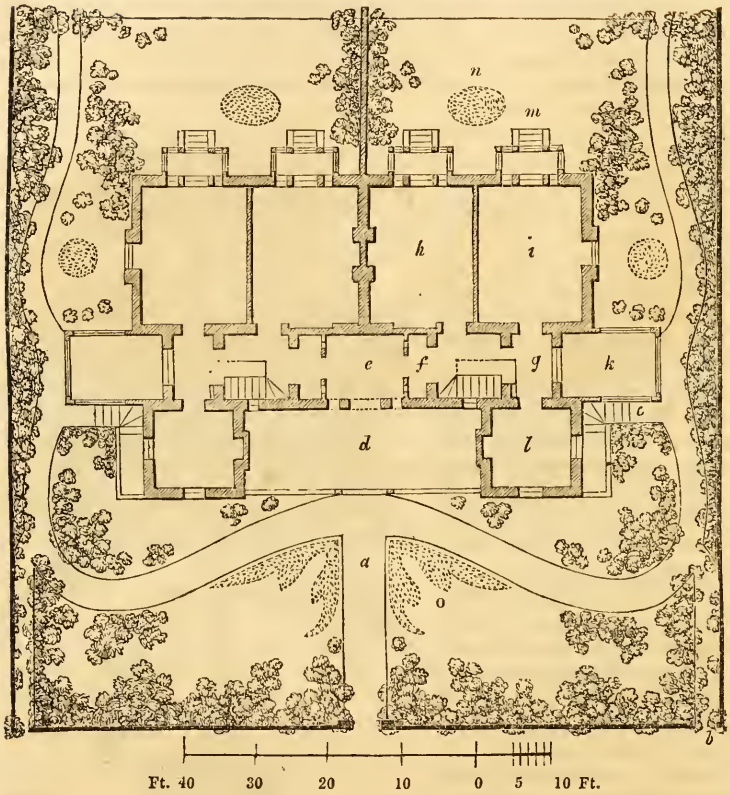

also common to both (*e*); vestibule, leading to the staircase (*f*); vestibule to the green-house (*g*); dining-room (*h*); drawing-room (*i*); green-house, or plant lobby (*k*); library (*l*); balconies to the dining-room and drawing-room windows, with steps descending to the lawn in the back garden (*m*); flower-beds on the lawn in the back garden (*n*); lawn in the front garden, with two arabesque beds for flowers (*o*).

192. *Laying out and planting.*—The object, in laying out and planting these two gardens, we shall suppose to be picturesque effect, so as to harmonise with the broken outline and numerous parts which compose the elevation of the house. The disposition of both trees and shrubs is consequently irregular, and by no means gardenesque. The kinds we shall suppose to be partly evergreen, and partly deciduous; and the prevailing species to be such as are common in the gardens or general scenery of Italy.

Evergreen Trees.—*P*ìnus Larício, *P. P*ináster, *P. P*ínea, and *P.* halepénsis; *Q*uércus *I*lex and gramúntia; and *C*upréssus sempervìrens, and *J*uníperus phœnícea.

Deciduous Trees.—Among these may be mentioned, the Lombardy poplar

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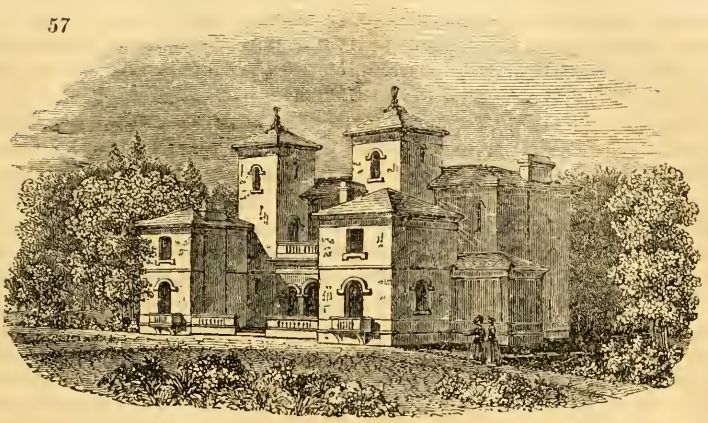

(which, however, must be very sparingly introduced); the Turkey oak, and the Neapolitan and other acers, various species of thorns, the catalpa, tulip tree, Judas tree, laburnum, almond *P*ỳrus spectábilis, &c.

Evergreen Shrubs.—These include the holly, box, sweet bay, common and Portugal laurels, arbutus, phillyrea, rhododendron, daphne, yucca, and many others.

Deciduous Shrubs.—These are very numerous, and include the *P*aliùrus aculeàtus, various species of *R*hámnus and *R*hús, azaleas, lilacs, cistuses, almonds, Coronílla Emerus, colutea, and many others.

193. *As characteristic of Italian scenery,* the vine ought to be planted, and allowed to climb up the trees, not for the sake of its fruit, but for effect; and one of the best kinds for this purpose is the claret grape, on account of the colour of its leaves in autumn. The pomegranate, the phillyrea, and the ilex are highly characteristic of Italian gardens; the pine and the Arúndo Dònax, of Italian scenery; and the orange tree, and the agave, or its substitute, the yucca, both in tubs and vases, of Italian villas. The most characteristic shrubs of the flowering kind belonging to Italy are, the cistus and the cytisus. We do not here mention the myrtle, the olive, or any other trees or shrubs which will not thrive in the open air in Britain, because they could not be introduced with effect in British imitations of Italian scenery. The *R*úscus hypophýllum, and the shrubby species of asparagus, are also found more frequently in Italy than in any other part of Europe, unless we except Greece. It fortunately happens for the imitator of an Italian villa in the suburbs of a great city, that the *P*ìnus Larício, the most common pine in the open scenery of Italy; the pinaster, the next common; and the stone pine, which is most generally found near Italian houses, and in their gardens, will all grow remarkably well in the smoke of London; as may be seen by examining the trees of these species in the arboretum of the Messrs. Loddiges, and comparing their appearance with that of the American pines, and even the Scotch pine, growing beside them.

194. *The flower-beds.*—The two arabesque beds in the front garden may be planted with carnations and pinks, which are peculiarly the flowers of

Italy; or with wallflowers and stocks, which are also very much prized there; or with evergreen saxifragas, which are common on the Italian alps. Or these beds might be wholly planted with the indigenous bulbs of Italy, which include some sorts of tulips, narcissi, crocuses, scilla, &c., interspersed with Neapolitan violets at regular distances. The beds *n* will have the best effect relatively to the other beds, and to the trees and shrubs, if planted with China roses, which were first improved by cross impregnation in the Royal Gardens at Monza. At the roots of the deciduous shrubs, in the groups on the lawn, may be planted some of the hardier bulbs of Italy, along with primroses, violets, &c., to come up through the grass; and, more especially, the colchicum and the *Cyclamen* europæum, which are highly characteristic of Italian scenery in autumn, as the crocus, the *Scilla* itálica, and the poet's narcissus are in spring.

195. *The Italian terrace and the green-house.*—For ornamenting these in summer, we would cultivate, in a green-house or orangery in the reserve garden, some orange trees, oleanders, pomegranates, olives, myrtles, and jasmines, in large pots or boxes, to place on the terrace and in the green-house about the middle of May. For training against the walls of the terrace in the autumn, we would recommend a collection of chrysanthemums to be kept in pots in the reserve ground till the beginning or middle of August, when they may be brought out, and the more delicate and late-flowering kinds placed against the walls of the house within the terrace, and the other kinds placed against the walls all round the house; some of the most select being arranged in the plant lobby. The kinds may either be chosen from the old Chinese varieties, of which there are above thirty in cultivation in the nurseries, or from the new British varieties, which have been raised from seed in Jersey and other places.

196. *The back garden* may either be wholly or in part under turf, and varied by trees and shrubs planted for picturesque effect, as in the front garden; or, it may be in part laid out in beds for culinary vegetables, as in fig. 34., p. 71. The walls should, we think, either be covered with ivy, or with evergreen and deciduous shrubs, and especially the flowering and odoriferous kinds. Among these, and also among the trees and shrubs planted in the front garden, may be some dwarf and standard fruit trees, of the more hardy free-bearing kinds; such as the Hawthornden apple, the glout morceau pear, the Orleans and magnum bonum plums, the morello cherry, the green gage and Warrington gooseberries, Wilmot's red currant, the champagne or striped currant, the Dutch white currant, the Naples black currant, and the cane and Antwerp raspberries. Even if there are no beds for culinary crops, there may still be a few circular beds, distributed in open places, for a few strawberries of different kinds; or the strawberries may be grown on a cone of earth faced on every side with bricks, flints, or stones, the strawberries being placed in the joints between them. By such an arrangement, the strawberries are obtained a week or a fortnight earlier than they would be on flat beds, particularly on the south side of the cone. The advantages of this mode of growing strawberries are, that the fruit may be gathered without stooping; it is certain of being always clean; and, if water be supplied liberally during the flowering and swelling seasons, it will attain a large size. The alpine, or common wood strawberry, treated in this manner, and supplied with water (which can be done by pouring it into an opening made on purpose in the apex of the cone), will continue in bearing all the summer.

197. *The reserve garden* should contain a house 10 or 12 feet high, to preserve the myrtle, olive, and orange trees from frost during the winter. This house, provided that no plants are kept in it but evergreens, which, like those above-mentioned, make their young wood during the summer, need not have a glass roof, but only a glass front; in consequence of which the frost will be very easily excluded by a very little fire heat. The chrysanthemums and other plants may be kept in a pit without flues.

198. *Remarks.*—Should it be wished to have a coach-house and stables, they might be formed near the kitchen entrance at *c*, the stable being on a level with the sunk area and the coach-house over it. The idea of having the stable under the coach-house is not one likely to be familiar to the general reader; nevertheless, there is a detached house in Porchester Terrace, where, from the declivity of the surface being in the direction of the road, the line of frontage is several feet lower at one end than it is at the other; and at this lower end an entrance is made to the stable and coach-house, which, by excavating the ground a little, are obtained under the principal floor of the house. To render this arrangement more clear to the reader, we refer to the longitudinal section (*fig.* 58.), in which the line *n n* shows the declivity of the street;

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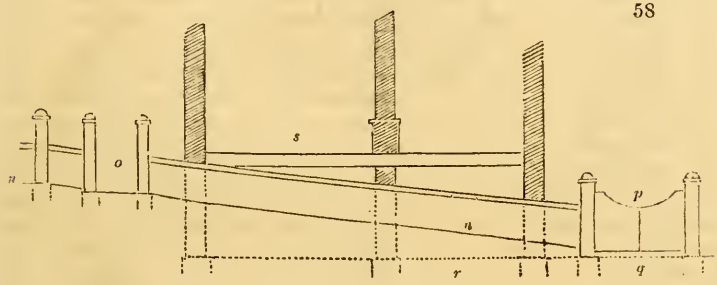

o, the principal entrance which is at one end; *p*, the entrance to the stables and the garden, which is at the opposite end; *q*, lines showing the depth to which the ground is excavated opposite the doors of the stable and coach-house, and to which there is a gradual slope from the street entrance; *r*, dotted lines, showing the level of the floor of the coach-house and stables; and *s*, the level of the principal floor of the house.

DESIGN XIII. *To lay out and plant the grounds of a detached house, occupying about an acre and three quarters.*

199. *The general form* is that of a parallelogram, as shown in *fig.* 59. In this plan the street entrance is by the veranda (*a*) to the porch (*b*), which leads to the staircase (*c*), dining-room (*d*), library (*e*), drawing-room (*f*), and green-house, heated from the back of the drawing-room and library fires (*g*). The kitchen-court is shown at *h*, and steps from the drawing-room to the lawn at *i*. At *k*, are steps down to the kitchen area, for servants; and at *l*, a flight of steps up to the green-house, for the gardener. The green-house has one glass door to the drawing-room, and another to the library; and, where the waste heat is not sufficient to keep out the frost, recourse is supposed to be had to one of Joyce's stoves, or some other apparatus for burning charcoal. This last resource, however, will seldom be necessary, if, every night during

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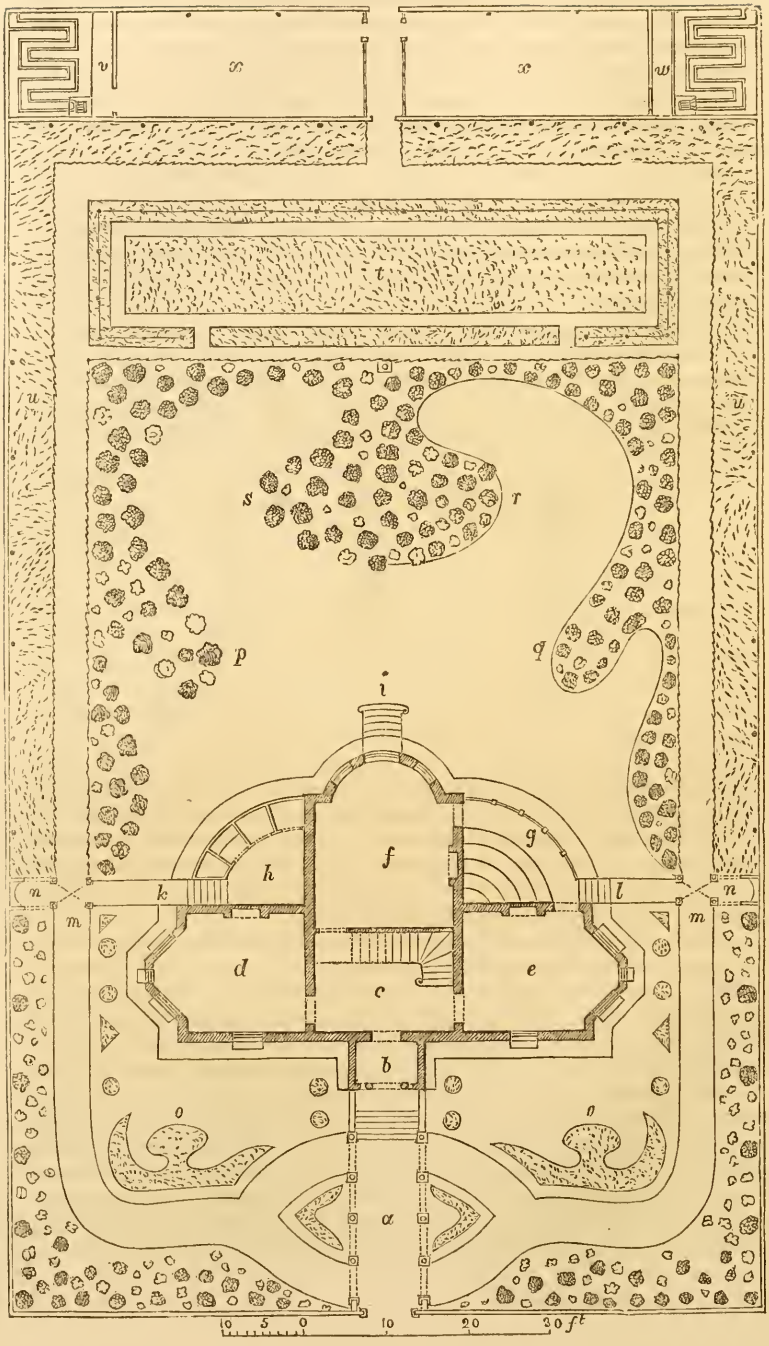
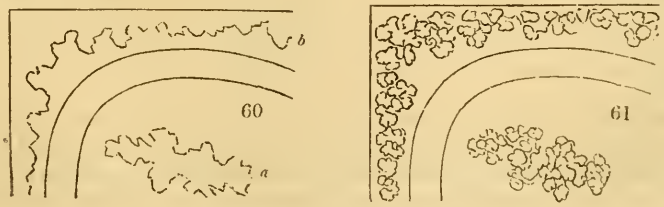


the most severe weather, the family, immediately before quitting the drawing-room and library, throw open the green-house doors; which will tend to equalise the temperature of the three apartments. As the furniture, books, walls, &c., in the drawing-room and library, must necessarily be heated to a temperature of about 60°, it will be several hours before the demand for heat by the green-house will reduce these rooms 20°, which would give a temperature common to the three of 40°; at which, or even at 35°, green house plants will take no harm. Two detached pavilions, supported on four latticed pillars, form a break in the walks at *m* and *n*, and serve as a foreground to the back garden, and *vice versâ*; and between these and the boundary walls there are covered seats at *n n*: *o o* are flower-beds; *p* is a plantation of low trees and shrubs, each plant standing distinct, in the gardenesque manner, and, in the plan, the trees being distinguished from the shrubs by their darker shade. For two or three years after these trees and shrubs are planted, the ground about them may be kept free from grass and weeds, and occasionally hoed or slightly dug; and for this purpose the plantation ought to be included in a definite outline, such as is formed by the edging of the walk on one side, and by the line *q r* on the other. As soon, however, as the plants have acquired sufficient strength to grow on a grassy surface, the outline on the lawn side may be obliterated, such of the trees and shrubs as touch one another thinned out, and the surface sown down with the finer grass seeds; the whole uniting and harmonising with the lawn, as indicated at *p* and *s*. We may observe here, as a general rule, that, in the gardenesque manner, wherever the ground is to be dug among trees or shrubs, the boundary should be definite; because the principle is, that a definite outline is most convenient for culture, and for the display of individual beauty. On the other hand, in a picturesque plantation, where the surface is to be dug, the outline should be indefinite, or consist of a ragged line; because indefiniteness and irregularity are properties of the picturesque. We may farther observe, for the sake of referring practice to principles, that, in a small garden bounded by right lines, like that before us, it will seldom be desirable to imitate the picturesque manner of gardening, and scarcely ever to form picturesque outlines; because, as the outline of the whole ought to serve as a guide for the outline of the parts, and as that outline, in the case of the smaller suburban gardens, is generally a square or a parallelogram, or, at all events, a right-lined figure, a picturesque line within would ill harmonise with the other lines; and, whatever kind of outline we might form on one side of the mass, or group, that on the other side could hardly fail to be geometrical or gardenesque. Thus, for example, if, instead of the definite line *q r*, in *fig.* 59., a ragged line had been substituted, still, though that side would have had a picturesque outline, the other side of the plantation next



the walk must still have been straight and definite, as in the plan; and thus the boundary on one side of the mass would have been at direct variance with the boundary on the other side. Almost the only case in which a picturesque boundary can be given to a group in a small square or parallelogram garden, like the present, is where the group stands completely detached on the lawn, as in *fig.* 60. at *a*; or where a marginal plantation is placed against the boundary fence, as at *b*. These outlines represent the boundary of the dug space before it is planted; but, after it has been planted a few years, this outline will be almost entirely obliterated by the trees and shrubs spreading over it, as shown in *fig.* 61.

200. *There is a small fruit-garden* at *t*, consisting of a central bed, in which strawberries, gooseberries, currants, raspberries, &c., are cultivated for being eaten as gathered by the family; and it is surrounded by a border, containing a trellis, on which some gooseberry and currant trees are trained, but which is chiefly covered with the finer kinds of cherries, plums, and summer pears, for the same purpose. There is a reserve garden at *x x*, for the cultivation of sweet herbs, salading, tart rhubarb, &c.; and for flowers for supplying the beds (*o*) on the lawn and the side borders (*u*). There is a small forcing-stove (*v*) for bringing forward roses, bulbs, mignonette, &c., for the green-house (*g*), and for growing early salading; and a flued pit (*w*), of the same size, in which a reserved stock of green-house plants may be kept. The borders (*u u*), it will be observed, are of considerable width for a small garden; and it is proposed to devote them entirely to flowers. The walls may either be planted with fruit trees, or with the higher class of ornamental low trees and shrubs, according to the taste of the owner. If the latter plan were adopted, and no duplicates introduced into the plantation *q r s p*, or into the boundary plantation from *m* by *a* to *m*, then in this garden there might be included all the finer low trees and shrubs of the British arboretum. The display of roses, Japan, Chinese, and American honeysuckles, magnolias, wistarias, passion flowers, pomegranates, *Clématis*, *Cydònia japónica*, Chimonánthus, and a host of other articles of the same kind, which either have been or will be enumerated, would be delightful at every season of the year; while in the borders might be passed in review all the finer herbaceous plants, annuals, perennials, or bulbous. The green-house (*g*), though small, yet being supplied by the small forcing-stove (*v*) and the reserve-pit (*w*), would make a fine display throughout the year; and, if it were thought desirable, there might be a vault under each of these pits for growing mushrooms, and forcing sea-kale, tart rhubarb, or chicory. The arabesque beds (*o*), and the small circular and triangular beds which accompany them, will contain a very fine display of half hardy annuals during summer, and masses of crocuses, snowdrops, tulips, and other bulbs, in spring. In short, this garden, of an acre and three quarters, under the management of a master fond of gardening, and with the assistance of a single labourer, might contain almost every thing that is desirable in a suburban garden. The general appearance of the house, veranda, walls, and walks, is shown in the isometrical view, *fig.* 62.

201. *Expense and management.*—Such a house as we have shown need not cost more than 750*l.*; and 250*l.* more will lay out and plant the garden, including the erection of the two pits. As so considerable a portion of the surface is under grass, the cost of yearly management will be much less than

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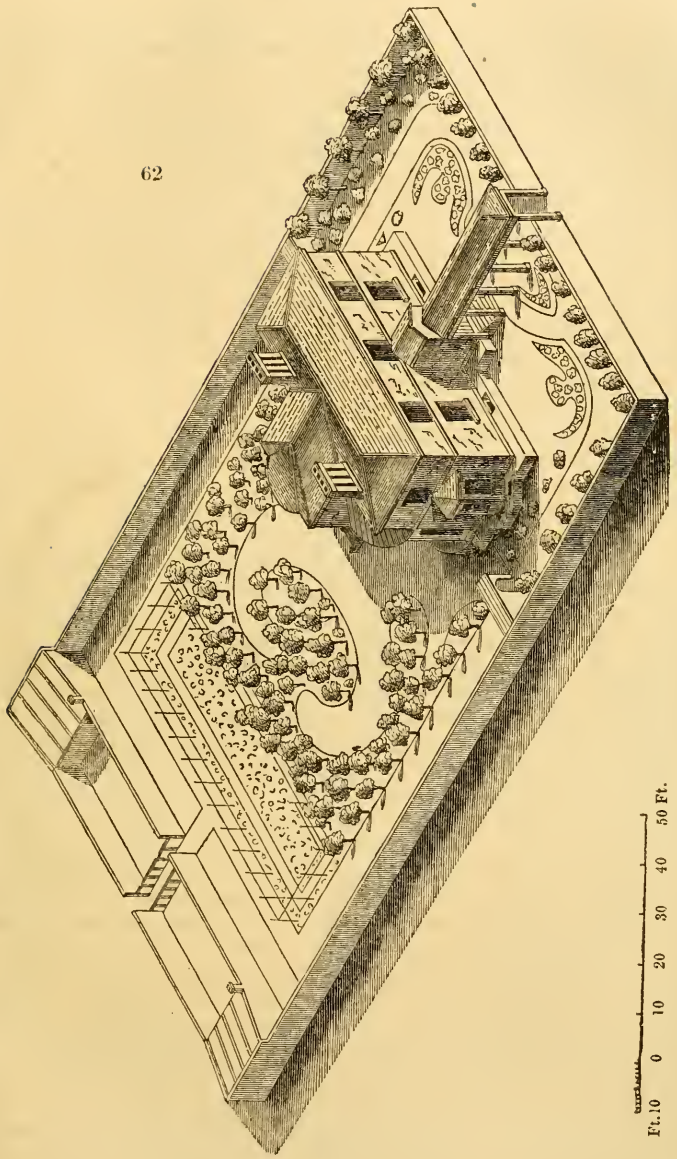

if the whole, or even the greater part, were under the spade. The grassy surface, from *o* to the small fruit-garden (*t*), occupies three quarters of an acre; the house, walks, and other buildings, fully one quarter of an acre;

leaving three quarters for flowers, fruits, and vegetables. This space might either be cultivated by the master, with the assistance of a labourer and a mowing-machine ; or by a head gardener, with a labourer, or the occasional assistance of the house servant. In the case of this villa, however, as in most others, very little can be said with certainty as to the expense of management, unless the style in which the garden is to be kept be given as one of the data on which the calculation is to be made. High keeping may always be set down at double the expense of ordinary keeping.

202. *Remarks.*—This residence, it is thought, would suit a citizen with a large family of children, or with a number of sisters, or grown-up daughters ; as it would contain a fine display of flowers, and also abundant space for amusement on the lawn, on which a tent might be placed during summer. If the occupier were his own head-gardener, he would find something to do every day in the year. Instead of ornamental trees on the lawn, there might be fruit trees. The walls might also be planted.

Design XIV. *To lay out and plant the garden of a double suburban villa, in Porchester Terrace, Bayswater.*

203. *General arrangement.*—In the ground plan, *fig.* 63. the entrances to the two houses are on opposite sides, on the same principle as in *fig.* 43. in p. 104; but here, the porches not being so conspicuous, and it being utterly impossible to see any considerable part of both at the same moment, from any point of view, the illusion is more complete. As this figure represents the ground plan of a double house and garden, one of which we designed, built, and laid out for ourselves, we shall, as a detailed illustration of the mode of laying out and planting suburban gardens of this kind, describe it at some length. The object was to build two small houses, which should appear as one, and have some pretensions to architectural design; being, at the same time, calculated for invalids, and, therefore, furnished with verandas extending nearly round the whole building, for taking exercise in during inclement weather. The houses form part of a row of detached dwellings lying parallel to Porchester Terrace, Bayswater, running north and south. According to the principles we have laid down, the diagonal of the square ought to have been parallel to the road, instead of one of its sides; and we should have placed the building in this manner: but, on stating our intentions to the surveyor of the estate, from whom we took the ground on a ninety-nine years' lease, he objected to it, as it did not appear probable that it would be generally followed in the other buildings in the same row, and, therefore, was, in his opinion, likely to disfigure the terrace.

204. *Drainage, service-pipes, &c.*—The soil being a loam on a subsoil of gravel, no under-draining was required, except the drains for the water-closets, back-kitchen, and rain-water pipes. For these purposes, each house has a barrel-drain, communicating with the sewer in the road. The general surface, and all the walks in the back garden, incline from one point at *a*, to another at *b*, where there is a drain to a small sewer in the back lane. From the point *a*, to *c* near the steps up to the front door, the surface of the walk and the adjoining ground is nearly level, but slightly inclining to *c*; and from *c* to the street entrance (*d*) there is a gradual slope of above a foot. There is also a very gradual slope of the general surface of the garden (say of 3 in.), from the margin of the walk *a c d*, to the party wall which forms the southern boundary of the garden; and between *c* and *d* there is

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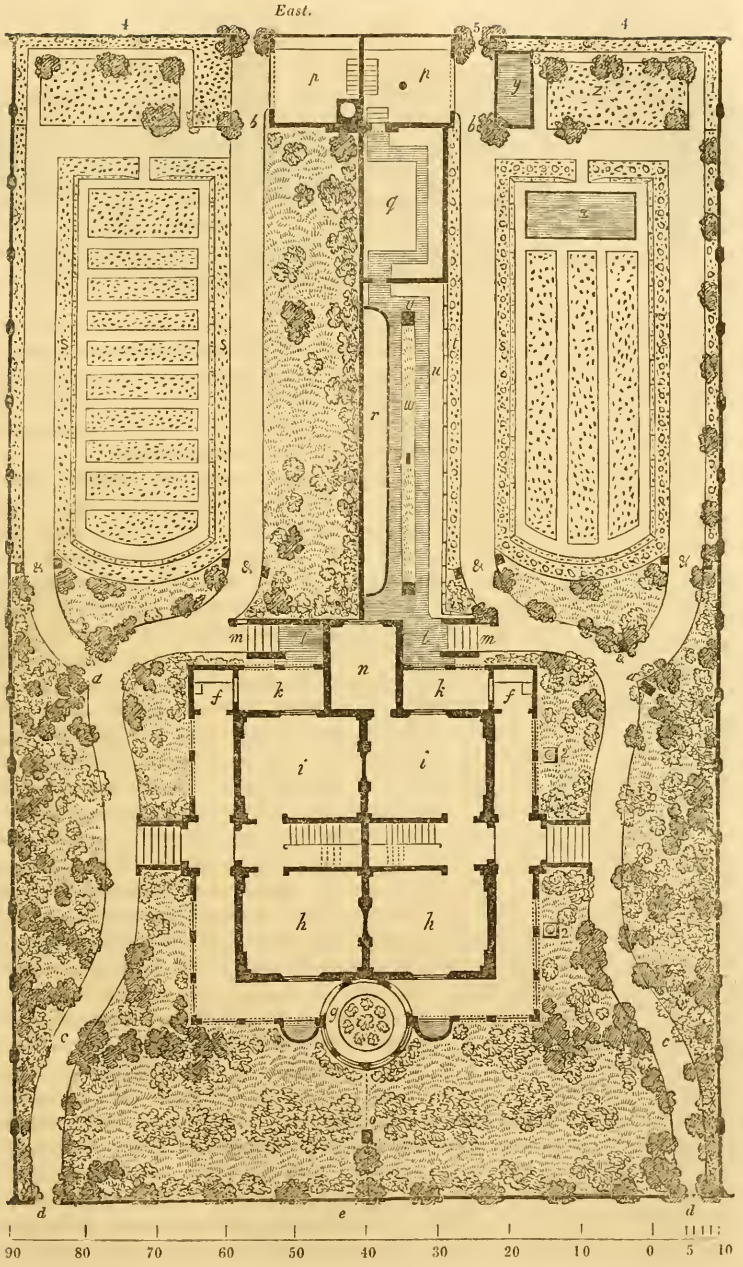
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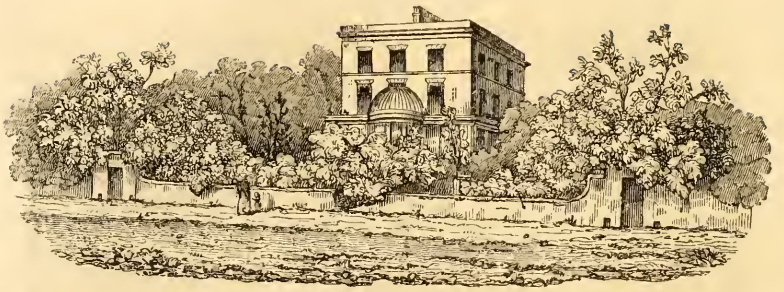

also a gradual slope (say of 6 in.) towards the point *e*. In consequence of these inclinations of the ground and walks, no rain ever stands on the surface, however abundantly it may have fallen. The service water-pipes of both houses are laid down along one side of the walks, from *d* to *a*, and are thence conducted to main cisterns for the supply of the houses, to others jointly for the houses and the gardens, and to other cisterns for water-closets.

205. *Soil, walks, &c.*—The whole of the ground, except the part on which the house stands, was trenched 4 ft. deep; the surface soil of what was excavated for the foundation and basement story of the house, and the half on the surface soil of the road, being previously distributed over the garden in such a manner as to raise the ground at the house 2 ft. higher than the footpath in the street. Round the house the ground was kept nearly on a level for some feet distant; after which it was made to decline equally on every side, till at the front entrance it was higher than the gravel of the public path by the depth of the sill of the gate; and at the back entrance it was on a level with the path of the public lane. Before trenching, the ground was also limed, and thickly coated over with the best London stable dung. The lime was introduced, not only for the sake of adding calcareous matter to the earth, but for forming a comparatively insoluble compound with the dung, in order to prevent it from being all employed by the roots of the trees at once. By a part of it being rendered comparatively insoluble, there will be, as it were, a reserve of nourishment in the soil for many years to come; because it is well known that time and the soil gradually dissolve such a compound. The trenching was performed in autumn, and in the following spring the walks were hollowed out, the edgings firmly beaten, and planted with box, and the walks laid with gravel, and immediately after very heavily rolled.

206. *The houses.*—The general appearance of this double house, as seen from the road, is shown in *fig.* 64., which is a sketch taken by E. B. Lamb, Esq., in September, 1837. The two street entrances, or gates, are shown in the front wall, each having two small niches for the scrapers. The gates are of open iron rods, hinged to stone, without the intervention of wood, which always gives a temporary appearance when joined with iron-work, especially in a door or gateway exposed to the weather on all sides. Consistency, with reference to durability in architecture, is as much a fundamental principle, as consistency in point of effect; and to hang an open iron gate to a wooden door-frame is a gross violation of this principle; and one which, when it

occurs on the very threshold of a residence, gives but a poor example of the taste which may be expected within. Wooden lintels to the entrance gates of the front gardens of suburban houses are offensive on the same principle, whether the gates are of wood or iron. An error of a different kind, very frequently committed in street gates and railings, is that of having them too much ornamented for the style of the house. The gates of these two houses, and the railing on the low wall between them, are composed simply of straight iron rods, pointed at top; and, instead of being painted of a pea-green, as is very frequently done, they were coated over with boiling gas tar, when first put up, and nothing has been done to them since. This preserves a proper gradation from the front railing to the railing between the pillars of the veranda, which is of a more ornamental description, and is painted of a stone colour. The trees in those parts of the garden which adjoin the house are so arranged as to make each side present quite a different aspect.

207. *The ground-floor of each house* consists of a porch and veranda, terminating at one end in a water-closet (*fig.* 63. *f*), and at the other in a small circular conservatory with a domical roof (*g*), a view of the plants in which is enjoyed equally from both verandas, as well as from both front rooms: *h* is the dining-room, with a recess for the sideboard; *i* is the library, with two large, and three small, recesses for bookcases; *k* is a grating over the sunk area into which the back-kitchen door opens, and which communicates, under an arch opening at *l*, with the ascending steps (*m*). The apartment (*n*), which might have been divided so as to form a light closet to each house, is appropriated to the house on the south side. The sunk floor consists of a front and back kitchen; wine, beer, and coal cellars; pantry, store-closet, and two other closets; and two servants' bed-rooms. So many apartments are obtained by making use of the space under the veranda; in which space, also, the main water-cistern is placed, with a sink under it, and also a fixed safe. The dust-hole, water-cistern for the garden, lumber-closet, and servants' water-closet, for each house, are under the apartment *n*.

208. *Out-door arrangements.*—The front gardens are divided by a light wire fence, in the centre of which is the pedestal *o*, surmounted by a handsome sculptured vase of Coade's artificial stone. The back gardens are separated by a flued wall, which, though only 10 in. thick, yet, being built with bricks set on edge, and not having the ends of the bricks quite flush with the wall on the north side, has a flue left in it 4 in. wide. The wall on the north side is chiefly covered with ivy; and, consequently, the surface of its brickwork is entirely concealed. At the lower end of the back gardens is a double shed (*p*); and on the south side of the party wall was a hot-house (*q*), and a green-house, or glass case (*r*), for green-house plants, which were trained to upright wires, against the flued wall; one species to each wire. Over each rafter of the hot-house was an iron rod, placed so as to be about 4 in. from the glass, and connected with light horizontal rods for the purpose of supporting a canvas covering during the winter nights, or in very hot weather in summer, when shading is required. This covering, when not in use, was rolled up by means of a pulley, on a rod which extended the whole length of the house, so as to be completely concealed from the sight, and secure from the weather. There were similar canvas coverings for the glass case (*r*): *s* is a double wire trellis for training fruit shrubs, such as gooseberries, on both sides; and in the south garden there was an additional trellis (*t*), placed on a dwarf wall,

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for ornamental shrubs. These trellises, the dwarf wall, and other arrangements, will be better understood by the section *fig.* 65.; in which *a* is the green-house, with the flued party wall behind; *b b*, the two paved walks in the sunk area; *c*, the strip of grass between these paved walks; *d*, the shelf for alpines in pots; *e e e*, the double trellises; *f f*, the gravel walks; *g g g*, raised beds for herbaceous plants; *h h*, borders for the arboretum and fruticetum; *i i*, miscellaneous borders; and *l*, the southern party wall. Between the dwarf wall under the trellis and the glass case, or green-house, the ground was lowered, so as to form the sunk area (*b c b*), which was on the same level as the floor of the back kitchen, and that of the hot-house (*q* in *fig.* 63.). On the south side of this area there was a stone shelf (*u*) for alpines in pots; on the north side, the green-house, or glass case (*r*), before mentioned; and the space between had a paved walk on each side, and in the centre a strip of grass, as already shown in the section *fig.* 65. In the middle of this small grass-plot, at *w*, was a socket for a double clothes-post; that is, a post having two horizontal arms at top, each of which supported a clothes-line, which was fastened to a hook in the rafter of the hot-house at one end, and passed over a pulley fixed to the basement of the veranda wall at the other. When the clothes-post was not wanted, it was taken down, and laid in a place appropriated for it, under the stone shelf *u*. At the hot-house end of the grass-plot, the alpine shelf terminated in a shallow cistern for marsh plants, and a deep cistern at *v* for aquatics. Near the cistern *v* was a sun-dial, and at the opposite end of the grass-plot a vase, the plinth under which formed a cover to a liquid manure tank, supplied from the water-closets. The double shed *p* has a turret with a clock, in the centre of the gable facing the houses (as shown in the section, *fig.* 65.), and a semicircular window in the centre of that towards the lane, which lights the lofts of both sheds; so that, from whichever side it is viewed, this double shed is symmetrical, and appears as completely a single one, as the double dwelling to which it belongs appears to be only one house. The shed belonging to the north house is fitted up as a wash-house on the ground floor, and it has a loft over. The shed on the south side has three floors: the middle floor, which is shown in the plan, is one step above the level of the walks of the garden, and the ascent to it from the hot-house was by four steps. In it there are a potting bench, a pump, a carpenter's bench, and a wooden safe for preserving fruit, bulbous roots, or large specimens of plants that will not lie flat between paper; and, against the walls, a small

glass case for a garden library, for the use of the gardener, and shelves for seeds, roots, tallies, &c. Beneath the potting bench are bins for different kinds of soils, empty pots, &c. There is a wooden staircase to the floor above, and there was a stone staircase to the floor below. The floor below contained a fireplace for heating the hot-house and green-house, with a space for fuel or lumber, and the remaining space was used for growing mushrooms, or forcing rhubarb, chicory, &c. The loft floor is for mats, and for onions, bulbs, and similar articles; with an opening to the machinery of the clock, for winding it up; and the half of the window, before mentioned, opening to the back lane. The smoke from the fires of both sheds came out through the vertical openings between the columns of the turret, in order to avoid the incongruous appearance of a chimney top over a clock; the turret being for the purpose of supporting a vane to indicate the direction of the wind to both houses. At *x y*, in the south garden, were two pits for green-house plants, 4 ft. deep, with hollow walls and hollow bottoms; and with an iron rod over each rafter, and about 4 in. above it, for the purpose of keeping the canvas covering necessary in winter a few inches from the glass, so as to preserve a non-conducting vacuity between the canvas and the glass. The part of the walls of these pits that was above ground was covered with ivy, to keep them warm. The bed z is planted with trees and a few flowers; and the border at 1 was a trough with a brick bottom and sides, for marine and bog plants. At *&* *&* *&* are brick pedestals, 9 in. square, and 1 ft. high, for supporting vases, or pots of choice plants when in flower; or which might be used for seats: the pedestal indicated at *m*, in the south garden, is surmounted by a statue in Portland stone; and that at *a*, by a crouching Venus in Austin's composition. At 2 2, in the front garden, are brick pedestals supporting vases, but which were formerly used as stands for bee-hives covered with earthenware covers, which were scored to imitate a straw hive; and at 3, in the back garden, was a Polish hive, fixed against the wall. [The hot-house, green-house, cold pits, stone shelf for alpines, &c., in the back garden, were removed in 1844, some months after the death of Mr. Loudon, and the space filled up, and laid with grass, to avoid the expense of keeping it up in its original state.]

Fig. 66. is an isometrical view of the house and both gardens, in which will be observed most of the objects described, except the trellises, and the trees and shrubs; which are omitted, to leave the ground plan more distinct.

209. *General system of planting both gardens.*—The object being to make both gardens, as well as both houses, appear as one, whether when seen in front or from behind, the more conspicuous ornamental and fruit-bearing trees and shrubs chosen for both gardens were of the same kind; any tree placed in a particular position, at the angle of the house, or adjoining the back or front entrance, &c., or of a particular kind or form (such as the cedar of Lebanon), in one garden, having a corresponding tree of the same kind in the other. For this reason, also, double trellises for gooseberries, &c., were formed in both gardens in the same situations (*s s* in *fig.* 63. p. 135.): and even, to a certain extent, similar ornaments were introduced. At the same time, as we intended to occupy the house and garden on the south side ourselves, we introduced a great many subordinate trees and shrubs of rare kinds into that garden, which were not planted in the other; and pursued a system of management and culture which, as it will show how much may be

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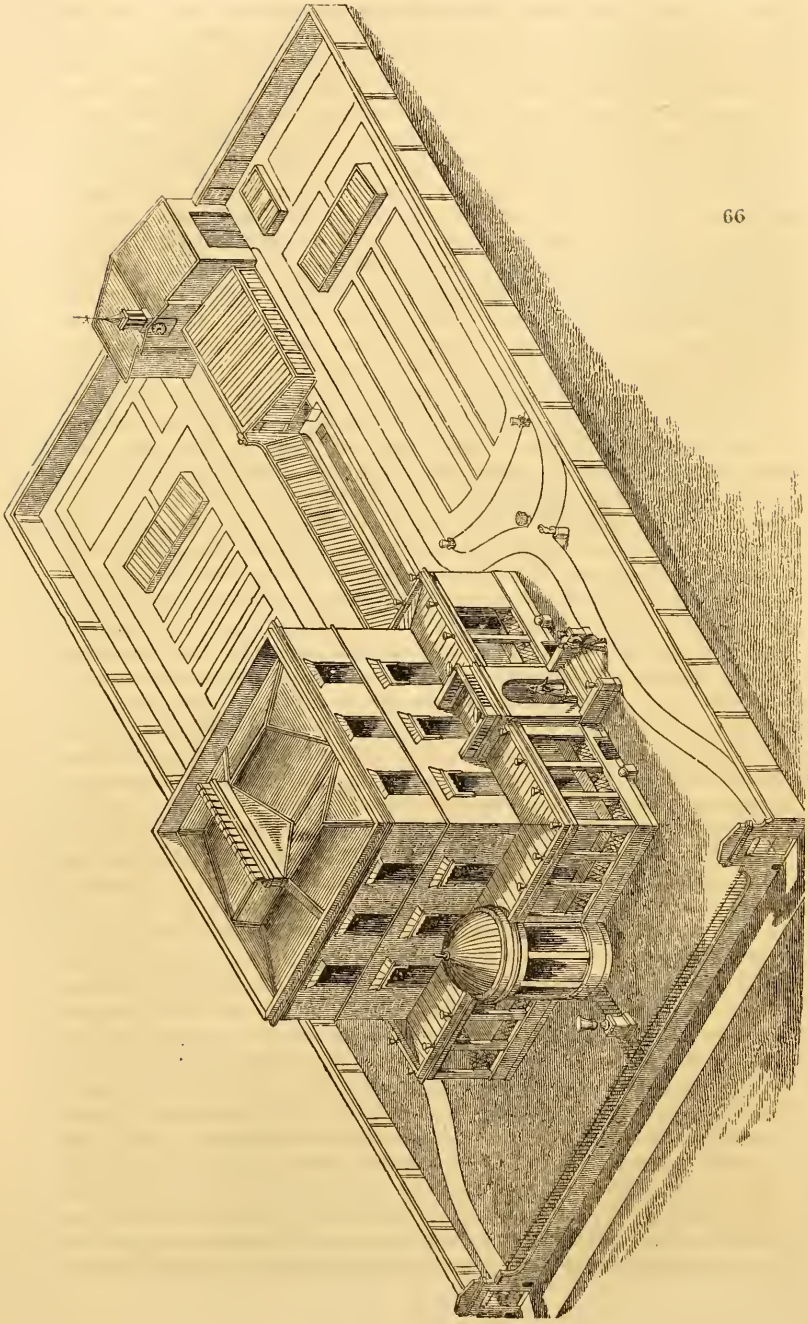

Isometrical View.

done in a small suburban garden, we shall give an account of under a distinct head, after noticing the mode of planting common to both gardens.

210. *In the front gardens of both houses*, close by the entrance gate to each garden, there are the following trees and shrubs:—a cedar of Lebanon, a walnut, a sweet chestnut, a purple beech, a *Pỳrus Sórbus*, a *Pỳrus* spectábilis, a *Cérasus Mahàleb*, a scarlet thorn, a laburnum, purple and white lilacs, a syringa, a mountain ash, a *Lýcium* bárbarum, a *Clématis* Vitálba, the common and giant ivy, and the Virginian creeper. These eighteen kinds of trees and shrubs are in two groups, one on each side of the entrance, immediately within it; and they form a dense mass of shade over the walk, and project over the wall into the road. This produces a dark shade, both without and within the entrance gates, which acts like the case of a telescope to the distant glimpse caught of the steps which ascend to the front door of each house. If we imagine for a moment that there were no trees or shrubs immediately within the entrance gates, the total want of shade and foreground, and, consequently, of what artists call effect, would be felt in an instant by every man of taste. Embracing the angles of the verandas near *c*, so as to connect both houses with the scenery as far as the boundary walls, are two groups, the same kinds of trees and shrubs being planted in each group; viz. a cedar of Lebanon, Robí*nia* viscòsa, *Sórbus* hýbrida, *Cérasus Pàdus*, *C.* nìgra, *C.* semperflòrens, a variegated and a common holly, a Portugal laurel, pinaster, *Prùnus* myrobálana, *Amelánchier* Botryàpium, a deciduous cypress, *Phillýrea* angustifòlia, *Aúcuba* japónica, evergreen and variegated hollies, Symphòria racemòsa, Persian lilac, rose acacia, and *Hibíscus* syrìacus. These form picturesque masses, and contain a sufficient number of evergreens to look well in the winter season; while, in spring, the myrobalan plum comes into flower at the end of February or the beginning of March, and immediately afterwards the amelanchier, and then the bird-cherry; next comes the *Sórbus* pinnatífida, and then the Robìn*ia* viscòsa. In the autumn, the purple berries of the bird-cherry, the red berries of the sorbus, and the white snow-berries have a fine effect; as have the coral berries of the holly throughout the winter and spring. There are two other main groups, the one to the north, and the other to the south, of the pedestal and vase at *o*, in the separation wire fence. These, in each garden, consist of a scarlet-flowered arbutus, rhododendron, azalea, kalmia, *Cydònia* (*Pỳrus*) japónica, mezereon, *Méspilus arbutifòlia*, and *Cýtisus* purpùreus and sessilifòlius, the latter two being grafted standard high. From the windows of the front rooms on the ground floor, this lengthened group makes an excellent middle distance between the pillars of the veranda, with the clustering foliage of the fig and the grape round the windows of the dining-rooms of the two houses as a foreground, and the trees and shrubs within the front fence as a distance. In winter, the fruit of the arbutus, and the flowers of the *Cydònia* japónica, make a fine appearance; and the latter shrub, which is indeed a truly valuable one, is more or less in flower during the whole year. Immediately within the front fence, which consists of a dwarf wall surmounted by an iron railing, is a row of variegated hollies, of as many kinds as there are plants; between each of which, when first planted in 1823, was a standard rose: but all these, as well as every other holly, have been since removed, in consequence of the vigorous growth of the hollies. Among the hollies are planted, as standards, nine thorns. Those next the entrance gates are the scarlet, that in the centre is the *Cratægus*

glandulòsa, and those between it and the scarlet thorn, on each side, are, the double-blossomed common thorn, *C.* tanacetifòlia, and *C.* orientàlis (odoratíssima). The double-blossomed common thorn comes into leaf a week or a fortnight before any other deciduous tree in the garden, and is profusely covered with its rich white blossoms, which die off of a beautiful pale pink, every year. Had it been a single-blossomed thorn of any kind, and, consequently, a fruit-bearing tree, in all probability it would only have been prolific in flowers every other year, as we have already stated, p. 63. *C.* glandulòsa comes first into flower, and produces every other year a profusion of scarlet berries; though, if the blossoms were thinned out, there would be a crop of fruit every year. *C.* tanacetifòlia is an upright, fastigiate-growing, rather singular-looking tree, with large yellow fruit; and *C.* orientàlis is a low spreading tree, with somewhat drooping branches and coral-coloured fruit. Had the variety *C.* orientàlis sanguínea (*Arb. Brit.*, p. 828.) been in British gardens at the time we planted this tree, we should have preferred it, its fruit being of a very deep port wine colour. The scarlet thorns, which, in both houses, are next the entrance gates, come into flower at the same time as the *P*ỳrus spectábilis, the laburnum, and purple and white lilacs; and, at that season, when these groups are looked down on from the drawing-room windows of both houses, they appear like gigantic nosegays. As scarlet thorns seldom set their fruit, they generally flower profusely every year. Between the entrance gates (*d*) and the points *&* *&*, in both gardens, there are, close to the boundary wall, common hollies, planted at regular distances, and between them pears and plums alternately as standards. The plums come early into blossom, and form a fine contrast with the dark green of the hollies. The pears were 20 ft. high when planted, and bore large crops of fruit for several years, till, with the plums, the greater part of them were obliged to be cut down, on account of their smothering the hollies and other plants. Behind the hollies, and immediately against the wall, common laurels were planted, and nailed against the wall so as to cover it; but plants of the giant ivy and of the Virginian creeper being planted there at the same time, they have since destroyed the laurels, and taken entire possession of the wall, forming a rich mantle along the coping.

211. *Between the line of hollies and the walk* there are various trees and shrubs, besides fruit-trees; including the autumn-flowering mezereon, of which there is a large plant exactly opposite the steps which ascend to the porch, the purple laburnum, the weeping variety of the common oak, *S*órbus vestìta, *Q*uércus palústris and *Q. I*lex, *I*lex opàca and *I.* baleárica, the hemlock spruce, the common yew, the variegated common laurel, the scorpion senna, white and yellow broom, *B*úxus baleárica, *S*pártium virgàtum, *R*ùbus pauciflòrus, *L*aúrus nóbilis, *C*órnus sibírica, *J*uníperus virginiàna, *C*upréssus sempervìrens, *P*hiladélphus hirsùtus, *P*ỳrus nivàlis, *R*hús élegans, and a great many others. On the opposite side of the walk, between the points *c* and *d*, the kinds, being in a great measure concealed from the road, are more rare on the south side of the building than on the north side; and include Salisbùr*ia a*diantifòlia, a male plant, with the female grafted on it; *D*iospỳros *L*òtus, a very handsome tree, of which there s ia portrait in our *Arboretum Britannicum;* Maclùr*a* aurantìaca, Magnòl*ia* purpùrea, Benthàm*ia* fragífera, Mahòn*ia* rèpens, *P*æòn*ia Moútan*, *Thèa* víridis, Illícium floridànum, Caméll*ia* japónica, *L*aúrus nóbilis, and several standard roses.

212. *In the curvilinear triangles* §, §, §, of each garden are, a cedar of Lebanon, Siberian crab, *C*órylus *C*olúrna, a quince, a berberry, a filbert, laurustinus, rhododendrons, *C*órnus más, *J*uníperus suécica, and various others. In the triangular spot in the south garden, between §, *m*, and the trellis (*t*), are, a weeping birch, sweet briar, Halimodéndron argénteum, grafted standard high, the common single-blossomed furze, *C*ydònia japónica, *E*uónymus europæus, *Syrínga* rothomagénsis, *R*hododéndron máximum, *R*úscus aculeàtus, *R.* hypophýllum, &c. This piece of ground is left in a comparatively wild state, to contrast more forcibly with the dressed ground beyond. It is worthy of remark here, that one of the most ornamental shrubs on this piece of lawn in the north garden is the common *R*òsa canìna of the hedges. It has thrown out shoots 15 ft. in length, which bend over the party wall, and in other directions, in the most graceful manner. It continues flowering the greater part of the summer; and in autumn and winter the branches are borne down by the weight of the scarlet hips. The laurustinus, some standard Noisette roses, *C*ydònia japónica, and the double-blossomed furze, on this lawn, are also very ornamental.

213. *Against the veranda* on the side of both houses next the road, there is at each angle a giant ivy; next, *C*rataegus *P*yracántha and Magnòl*ia* grandiflòra; and, round the dome, Lonícer*a* flexuòsa, *Técoma* capreolàta, Magnòl*ia* cordàta, *R*òsa Boursaúlt*i*, Ayrshire rose, Wistàr*ia* sinénsis, and *C*ydònia japónica; and, in the centre, a claret grape, on account of its purple foliage in autumn. On one side of the wire fence, near the dome, is a double-blossomed furze, and on the other a *Rìbes* sanguíneum; and, in front of the kitchen window (the semicircular sunk area before which is shown in the plan), are *V*inca màjor and mìnor, and *Yúcca* glorìosa. Against the veranda on the south side of the house are planted Escallòn*ia* rùbra, Lonícer*a* gràta; Magnòl*ia* acuminàta, M. conspícua, and M. grandiflòra; *R*òsa moschàta, Passiflòra cærùlea, Wistàr*ia* sinénsis and frutéscens; China roses, budded on *R*òsa arvénsis, *C*ydònia japónica, *J*asmìnum officinàle, Kérr*ia* japónica, and the double-flowered pomegranate. Against the veranda on the north side of the building are honeysuckles of different kinds, Virginian creeper, and ivy; and against the east side are honeysuckles, ivy, figs, and vines. The veranda all round the building is roofed with glass, and under it, on the south-west and east sides, are trained on upright iron rods, placed 8 in. apart, figs, which grow luxuriantly and produce abundant crops of fruit, and grapes; the stems of all these being conducted through the area under the paved floor of the veranda, to the ground outside of it.

214. *Boxes for flowers.*—Between the pillars, immediately within the panels of open iron-work, are placed narrow boxes, the exact length of each opening, which are filled with small pots of plants in flower, changed throughout the year as they go out of bloom. In autumn and winter, these are chiefly Russian violets, protected from frost by having a mat thrown over them; and, in spring, forced hyacinths, which make a brilliant display. At the bottom of the back wall of the veranda, a collection of chrysanthemums are placed when in flower, and their stems being tied to the rods which support the vines, they flower beautifully in the month of October and November, remaining in mild seasons till Christmas. We mention this for the sake of showing that a veranda of this kind is capable of affording a great deal of floricultural enjoyment. Under the veranda on the north side of the building

no plants are trained, the occupier preferring to be without them. The conservatory (*g*) is planted with different varieties of Camél*lia*, and the piers with Eriobótrya japónica, Lonícer*a* flexuòsa and japónica, Wistàr*ia* sinénsis, Passiflòra cærùlea, and vines: the latter are the royal muscadine, the muscat of Zante, muscat of Alexandria, Money's West's St. Peter's, and the black Hamburg. These vines are trained round the inside of the glass dome, and produce a good crop yearly. The door shown in the back part of the veranda has the panes of looking-glass; and, before the camellias grew large, it reflected them, as seen from the front garden, and from the road, in a very striking manner.

215. *Grass-plot in the front garden.*—We have now completed the planting of the front gardens; and all that remains is, to state that the surface of the soil among these plants, composing much the larger half of both gardens, was next sown down with grass seeds, in order to be kept in turf; the cropping of the grass among the stems of the shrubs being done by hedge-shears. As a finish to the turfed part of the gardens, and also as a definitive line of demarcation between it and the dug part, the dwarf pedestals and vases at *f f* were introduced. These vases also harmonise with the vases which form the crowning termination to the pillars of the veranda.

216. *The planting common to the back gardens* of both houses will not require many details. In each of the two small angles between the back entrance and the shed, a walnut tree is planted, which, having been 20 ft. high in 1823, soon overshadowed, not only the entrance, but even the roof of the shed. There are also common ivy, Virginian creeper, a China rose, and *Lý*cium bárbarum planted in these angles, from which they are trained over the shed and the boundary wall, mantling over and greatly enriching both from the lane. The other trees immediately within the eastern boundary wall are pears, a golden-pippin apple, and a mulberry. The pears are the Chaumontelle, glout morceau, Duchesse d'Angoulême, Marie-Louise, and beurré Spence. On the west side of the north shed a giant ivy and a vine are trained; and on the south side of the south shed Lonícer*a* japónica and *C*ydònia japónica. The fragrance of Lonícer*a* japónica (the Lonícer*a* flexuòsa of most nurseries) is so great, when in flower, that, when coming home from London late in the evenings, when the wind has been in the west, we have felt its sweetness at the distance of nearly a quarter of a mile. The wall of the north garden which faces the south is planted with peaches and nectarines, and the east wall with apricots. Down the centre of the spaces enclosed by the trellises *e e*, a row of standard apple-trees was planted, chiefly the Hawthornden and other early-bearing sorts, as it was intended to take them away as soon as they produced too much shade on the ground below. The north side of the party wall of the south garden was planted with cherries and plums, and with standard pear-trees, at regular distances, so as to produce shade in the summer time on the walk, and to admit the sun's rays during winter. Ivy, honeysuckle of different sorts, and climbing roses, were subsequently planted against this wall; but the ivy has now taken entire possession of it, and forms a mantling covering to the coping from one end of it to another. The eastern boundary wall of the south garden is planted with Chimonánthus frágrans, Magnò*lia* Soulange*àna*, *J*asmìnum revolùtum, and *R*òsa Boursaúlt*i*, and other roses. In the centre is a plant of ivy, which is trained with a single stem as high as the coping, on the top of which, under a

chevaux-de-frise, it spreads both ways, and forms a fine mantling canopy. The footpath in the lane being formed over an old, deep, dry ditch, by filling it in with the soil of an old grubbed up hedgerow, it occurred to us, when building the wall, that it would form an excellent place for the root of a vine. We accordingly had a small hole left in the wall, about a foot under the surface, and, in due time, thrust through it a strong three-years-old cutting of the black Hamburg, 4 ft. in length, which has since grown with extraordinary vigour, mounting to the tops of the pear-trees, and producing abundance of fruit, which, in fine seasons, is coloured (though not ripened), and which gives the whole the character of Italian scenery, admirably in keeping with the veranda round the house.

217. *The edgings to the walks* of both back gardens are of box. That of the front gardens, from *d* to *f*, was originally of turf; but the grass not growing well, in consequence of the crowded state and greatly increased size of the shrubs, we found it advisable, some years afterwards, to substitute an edging of brick, laid flatwise, without mortar, alternately header and stretcher; and which, joining in with the turf on each side, soon became covered with weather stains, and now forms altogether an admirable edging for this description of garden: it may be considered a kind of architectural string-course or band, which, expanded into a parallelogram or square basement, as at *a* or *f*, forms an excellent foundation for erecting a pedestal for a statue or a vase. It also harmonises with the band of brick laid on edge which forms an apparent basement round the veranda. In 1849, twenty-six years after these gardens were laid out and planted, that on the south side still preserved much of its original character; though nearly a third of the trees and shrubs originally planted had died, or had been cut down for want of space. In the north garden only a few trees were left, and the greater part of the ground was covered with grass.

§ 4.—*Culture of Suburban Gardens.*

218. *Plants grown in suburban gardens* labour under many serious disadvantages inseparable from their situation, and the evil effects of which can only be guarded against by extraordinary care in their cultivation. The soil in which they grow is frequently hard and cold, from bad drainage and constant saturation with water: they are deprived of a proper quantity of light and air, and the pores of their leaves are choked up by constant depositions from the smoky atmosphere by which they are surrounded. Thus circumstanced, it is almost impossible to keep flowering plants in a healthy state without constant care and attention; and even care and attention will be useless unless accompanied by a knowledge of the wants of the plants, and of the right manner of supplying them. It will therefore be necessary to say a few words on the food of plants, and the organs through which it is absorbed, in order to know how to supply that food properly, and how to keep the organs which are to absorb it in a proper condition.

219. *Plants take the greater part of their food*, which must be either in a gaseous or liquid state, partly through the spongioles of their roots, and partly through the pores in their leaves; and consequently, it is of the greatest importance not only to keep these organs, which are of the most delicate construction, in a condition to exercise their functions properly; but to take care that they come in contact with the food required by them. The food of

plants consists of carbon, (which is found partly in the ground, and partly in the air,) oxygen, hydrogen, and nitrogen, which are absorbed by plants partly from the air, and partly from the water with which they are supplied; and numerous mineral or earthy substances, which are produced from the ground, but which must be dissolved in water, or reduced to the state of gas, before they can be absorbed by the plant. Although it is clear that the principal organs through which plants take their food are the roots and the leaves, there is no doubt that some portion of it is absorbed by the green part of the stem and branches. The leaves are also useful in assimilating or digesting food; and they act as organs of respiration and perspiration, by throwing off superfluous air and water. It is quite evident that these various functions cannot be performed properly if the surface of the leaf is loaded with soot, or dust, or any other substance which chokes up the pores; and consequently syringing the leaves is one of the most important points of culture in a suburban garden. The roots only take up food through what are called their spongioles, from their resemblance to little sponges. These spongioles consist entirely of cellular tissue and mucus; and, as they are unprotected by any epidermis or skin, they are easily rotted if exposed to too much moisture; and, on the other hand, if they are kept too dry they lose their power of expanding and contracting to receive moisture, and to send it up through the other vessels of the plant.

220. *Manures* should be used with caution in suburban gardens, as the plants are seldom in a state to digest properly those which are of a very strong nature. Animal manure to plants is like animal food to human beings, and requires a healthy frame to assimilate it. Vegetable mould, formed of rotten leaves mixed with sand; and carbonate of ammonia, mixed with water, will be found the best manures for delicate plants growing in a confined situation.

221.—*The soil in suburban gardens* is very often in a very bad state for growing plants. This is most generally the effect of want of drainage; and as most suburban gardens are over watered, the water which cannot escape chills the soil, and, in some cases, rots the roots of the plants. It is true that the latter evil is only seldom felt; but the coldness of the soil is a fact of every day occurrence, though comparatively few persons are aware of its existence. "Drained land," says Dr. Lindley, "is, in summer 10° or 20° warmer than water-logged land." The reason "consists in the well-known fact that heat cannot be transmitted downwards through water." Thus, neither the heat of the sun nor the warm rain can penetrate to the roots of plants in ill-drained land; even boiling water poured on the surface would have no effect in warming soil on which cold stagnant water naturally stands. Air also cannot reach the roots of plants grown in soil of this nature; and, as Dr. Lindley observes, it is as important to permit the access of air to the roots as to the leaves: "both extremities of plants feed on air, the roots more than the leaves. Place a plant in a place where air can gain no access to its leaves and they fall off, to be followed by the decay of the stem: roots, under the same circumstances, will gradually shrink and die."—(*Gard. Chron.*, 1849, p. 35.)

222. *The principal conditions, therefore, necessary to the health of plants in suburban gardens* are, to keep the soil open and friable, so as to admit freely of the passage of minute particles of air and water to the roots of plants; to syringe the leaves of the plants as frequently as possible, so as to keep them

clear from all impurities; and not to overwater the roots. Where rose trees are grown, it is a great point to keep them clear of aphides; and the best mode of doing this is to make a little brush of pieces of bast mat, tied together, and fixed on a bit of stick. This brush is much softer, and less likely to injure the delicate texture of the young shoots, than a brush made of hair or bristles.

223. *It is necessary that the food of plants should be in a state of minute subdivision* when it is presented to the spongioles of the roots; and it is also necessary that these delicate organs should not be plentifully supplied with food, unless the leaves are kept in a healthy state, so as to digest it properly. Thus, if the roots are supplied with abundance of water, manure, and air, and no water is given to the leaves, which are suffered to remain laden with soot or dust, the spongioles, acting mechanically, will take up more food than the plant can digest; and its vessels becoming choked up, "the usual circulation of the fluids will be impeded, and it is not surprising that the plant should droop, that its flowers should not expand, or that its fruit should shrivel or drop off prematurely, and that in the end it should die; as in fact it may be said to expire of apoplexy, brought on by indigestion."—(*Gardening for Ladies*, 1st edit., p. 27.)

224. *The want of light is another disadvantage* which attends suburban gardens. Light is essential to plants to produce the chemical changes which ought to take place in their leaves; and suburban gardens, from their small size, and the height of the surrounding houses, have frequently their largest portion in the shade during the greater part of the day. Light is particularly necessary to the production of flowers, and to the ripening of fruit; and hence suburban gardeners find it very difficult to grow showy flowers, and to ripen fine fruits.

225. *Selection of plants for a suburban garden.*—It is generally necessary, before planting a suburban garden, to decide whether it will be better to plant trees or flowers; or, in other words, whether the garden shall be shady or showy, as it is very difficult to manage to combine the two. In general, a shady suburban garden is thought most agreeable, as green leaves and shade form a delightful contrast to the hot dusty road; and an appearance of gaiety in flowers can be obtained by placing a few calceolarias, verbenas, petunias, and pelargoniums (which have been grown in pots, and brought into flower in a green-house), here and there as taste may dictate. These plants may be procured in full flower during the months of May and June, in London and its neighbourhood, at about 4*s.* for a dozen plants, and, during the remainder of the summer, for about 3*s.* a dozen. The same kinds of plants, without pots, may be had at a still cheaper rate, and are very useful for bedding out; that is, for planting in the open air.

The deciduous trees, not having ornamental flowers, that will thrive in a suburban garden, are:

The walnut.
The black walnut.
The fig.
The weeping ash.
The tree willow.
The weeping willow.
The elm.
The wych elm.
The weeping elm.
The oriental plane.
Various kinds of poplars.
To these may be added, Ailántus glandulòsa, and Sophòra japónica, with the weeping variety of the latter.

The flowering trees are:

The horse chestnut.
The robinia, or false acacia.
The laburnum, and its varieties.
The hawthorn, and some of its varieties.
The double-blossomed peach.
The almond, and, in some places, Magnòlia grandiflòra.

The hardy climbing shrubs are:

The Wistària, or Glycine sinénsis; the common jasmine; the Virginian creeper; Clématis montàna, with some other kinds of clematis; Perìploca græ\ca; the common passion-flower; Menispérmum canadénse; Aristolòchia sipho.

The evergreens are not numerous, as they will not bear the smoke so well as trees which lose their leaves in winter. All the American pines and firs become stunted and shabby in a town garden. The Scotch pine does not attain half its usual size, and its foliage looks black and withered. The spruce fir and the cedar of Lebanon lose their lower branches, and a great portion of their leaves. The principal evergreens that will bear the smoke are:—

The yew.
The red cedar.
Alatérnus.
The arbor vitæ.
The box, and
The holly; of which last there are numerous varieties. The Deodar cedar, Pìnus Larício, and Pìnus excélsa, will also grow in town gardens. The pyracantha, or evergreen thorn, is an excellent plant to train against a wall, from the great profusion of its white blossoms, and its red berries, which hang on all the winter.
Ivy, the common, the giant, the palmate, the golden-leaved, and the silver-leaved, are all valuable.

The best deciduous shrubs are:

The lilac.
The garden syringa.
The Althæ\a frùtex.
The red-blossomed currant (Rìbes sanguíneum).
The sumach (Rhús Cótinus, and typhìna).
Cydònia, or Pỳrus japónica.
Pàvia macrostàchya.
The mezereon, pink, dark-red, and white-flowered.
Snowy mespilus (Amelánchier canadénsis).
Roses of various kinds; observing that the hybrid China and Bourbon roses will bear the smoke better than the common cabbage, or Provence, or than the yellow roses. The cluster, the tea-scented of various kinds (particularly Ròsa rùga), and the perpetual roses (especially Lee's perpetual, or the Rose du Roi), will grow as well in London as in the country. Of the moss-roses, the crested-moss is the best.

The best evergreen shrubs are:

The laurel; the privet; the Portugal laurel; and sometimes the laurustinus; the arbutus; the broom; the double-blossomed furze, and the alaternus.

Herbaceous plants.

The following list comprises most of the common perennials which will bear the smoke:

DWARF PLANTS.

Alỳssum saxátile (yellow flowers).
A\rabis montàna, white, and some other kinds.
Aubrietia, purple.
Hepatica, pink, blue, and white.
Campánula pùmila, white and blue.
C. gargánica, and some other kinds.
Scílla sibírica, and other kinds.
Hyacinths of various kinds.
Christmas rose (Helléborus nìger).

TALL PLANTS.

Aconitum (monk's-hood and wolf's-bane) of various kinds. A. autumnàle is a new species, which flowers in autumn.
Aquilegia (columbine) of various kinds.
Adònis vernàlis (yellow).
Agrostémma coronària (the rose campion).
Antirrhìnum màjus tricolor (variegated

snap-dragon), and various other kinds of snap-dragon.
Anchùsa itálica (blue bugloss).
A'ster Améllus, and other kinds of Michaelmas daisy and China aster.
Baptísia tinctòria.
Various kinds of tall campanulas.
Catanánche cærùlea.
Coreópsis verticillàta and C. lanceolàta.
Delphínium grandiflòrum and Barlòwii (blue larkspurs).
Diánthus latifòlius, and some other kinds of pinks and carnations.
Dictámnus Fraxinélla.
Fritillària imperiàlis (crown imperial).
Gèum coccíneum màjor.
Gladìolus commùnis (corn flag).
Hedýsarum (French honeysuckle).
Heliánthus decapétalus (perennial sunflower).
Lilium cándidum (white lily).
—— auràntium (orange lily).
—— Mártagon, and several other kinds.
Lupìnus polyphýllus (dark purple, lilac, and white).
Lupìnus nootkaténsis.
Œnothèra speciòsa and macrocárpa (evening primrose).
Ornithógalum umbellàtum (white star of Bethlehem).
O'robus variegàtus.
Pæonies of various kinds.
Papàver orientàle, and P. bracteàtum (scarlet poppies).
Pentstèmon gentianoìdes.
—— atropurpùreus.
Phlox, various tall kinds.
Polemònium grácile.
Potentílla atrosanguínea.
—— nepalénsis.
Ranúnculus aconitifòlius (fair maid of France).
—— àcris fl. pl. (bachelor's buttons).
Rudbéckia hírta.
Spiræ'a Filipéndula.
Státice latifòlia.
Tróllius europæ'us (globe flower).
Verónica multífida.
Hops are climbing perennials, very useful in town gardens.

Biennials.

Hollyhocks.
Stocks.
Canterbury bells (Campánula Mèdium).
Campánula pyramidàlis.
Sweet William, various kinds.

Annuals.—Most of the common kinds require more space, more free air, and more sunshine than are to be found generally in town gardens. The Californian annuals, however, and some other kinds, may be sown in autumn to flower in early spring. The following is a list of annuals, principally from California and South America, which may be treated in this manner:

Nemóphila insígnis, blue.
N. atomària, white.
N. discoidàlis, blackish with a white margin.
N. maculàta, white with purple spots.
Eschscholtzia Califórnica, yellow.
E. cròcea, orange.
E. compácta, yellow.
Clárkia pulchélla, lilac.
C. p. flòre álbo, white.
C. élegans, red.
Gília trícolor, lilac, blackish, and white.
G. bícolor, lilac and white.
Collínsia bícolor, lilac and white.
Leptosiphon, several species, blue and white and pink.
Calliópsis tinctòria, and varieties.
Málope trífida.
Viscària oculàta.
Sweet peas, convolvuluses of different kinds, and the common nasturtium (Tropæ'olum màjus) are hardy annual climbing plants.

Climbing half-hardy annuals.

Tropæ'olum peregrìnum (Canary-bird flower).
Cobœ'a scándens
Lophospérmum scándens, and varieties.
Maurándya Barclayàna.
Rhodochìton volùbile.

To these may be added, Thunbérgia alàta, Ipomœ'a rùbro-cærùlea, and several other showy plants, which require a hot-bed to raise them, but which will grow and flower freely in the open air during the summer. Eccremocárpus scàber may be raised from seed, and will flower the first year, but if protected from frost, it will live several years.

§ 5. *Renovation of Suburban Gardens.*

226.—*Renovating suburban gardens.*—Whoever does not build or take possession of a new house, so as to have the garden to lay out himself, will, on changing his residence, probably find that the garden of his new abode requires renovating. To ascertain how far this is necessary, he has only to test every part of his garden by the principles and rules for laying out and planting which we have already laid down; and we shall therefore confine our remarks here to directing his attention to those points in which an old garden will generally be found defective.

227. *The soil in old suburban gardens* has frequently a sodden, black, soft appearance, and the fruit-trees are barren, cankered, and covered with moss. This is the combined effect of bad drainage, over-watering, and over-manuring. Over-watering is a common fault in town gardens; and it is particularly injurious in the neighbourhood of London, where the soil is generally clayey and badly drained, and where the soil is frequently loaded with stable manure. Most persons imagine that manure and water are all that are wanted to make a garden fertile; and, if the fruit-trees do not bear, and the flowers and vegetables do not thrive, manure and water are considered to form an universal panacea. Now, the fact is, that so far from this being the case, most small gardens have been manured and watered a great deal too much; and in many, the surface soil, instead of consisting of a rich friable mould, only presents a soft black slimy substance, totally unfit for the purposes of vegetation, and into which the manure is changed, from being saturated with stagnant water. "No appearance is more common in the gardens of street houses than this, from these gardens being originally ill-drained, and yet continually watered; and from their possessors loading them with manure, in the hope of rendering them fertile."—(*Gard. for Ladies*, first edit. p. 26.) The obvious remedy for a case of this kind, is to trench the ground so deeply as to bury the surface soil, and to supply its place with the subsoil, or to mix the surface soil with lime or sand; but no remedy will be permanently efficacious if the drainage is defective. "Why is land improved by good drainage?" asks Dr. Lindley. "Many believe the whole advantage consists in removing water: but water is not in itself an evil; on the contrary, it is the food of plants, and its absence is attended with fatal results. It is the excess of water which injures plants, just as an excess of food injures animals; with this difference, that animals can refuse what is hurtful to them, while plants have no choice, but must take into their system whatever is in contact with the spongioles of their roots. The latter therefore are more readily gorged than the former. But undrained land is not merely wet; it is water-logged. All the interstices between the particles of earth being filled with water, air is necessarily absent, except that small quantity which is dissolved in the water. In this way plants are deprived of the most essential part of their food: but when the water is removed, air takes its place, and holds in suspension as much water as the roots can thrive upon; for it is not water in a fluid state that plants prefer; it is when it has assumed the state of vapour that they feed upon it best; so that the removal of water permits air and air-borne vapour, the best of all food for roots, to take its place."—(*Gard. Chron.* for 1849, p. 35.)

228. *The underground drainage*, in a garden which has been in cultivation

for twenty years, will frequently be found more or less choked up; the indications of which are dampness and moss on certain parts of the walks, where the surface is lowest; the sodden, black, soft appearance in the soil, already described; and mossiness and canker in the fruit-trees When the drainage is defective, there is no remedy but digging out the drains, or forming others in their stead, in the same or in preferable directions, and with fresh materials. The surface drainage, also, will often be found defective, from the ground, when the garden was first formed, having settled unequally; and this evil having been aggravated during a series of years. In cases of this kind, the hollow places formed by the sinking of the soil will hold water in pools after every heavy shower; where the walk has sunk, the gravel will have become blackened or muddy on the surface, and the box or other plant edging will look pale and sickly. There is no remedy for this but relevelling the surface; which implies taking up the gravel of the walk and its edgings, as well as such of the trees, shrubs, and plants as may grow in the hollow spaces; and, after raising the whole with fresh earth and gravel, to replace the plants. The sewerage, or drain, from the house to the public drain or sewer, and also the means of conveying water to the house, whether by pipes from a public company, or a well or tank, should be examined. The well will most probably require cleaning, and, possibly, its sides may want to be taken down and rebuilt. The same remark will apply to tanks.

229. *The boundary walls, or fences,* of the garden, of whatever kind these may be, can hardly fail to require some repairs. If they are brick walls, on which trees have been trained for many years, the bricks will be full of nail-holes, and their joints will be found open from the falling out of the mortar. The common mode of remedying this evil is to repoint the wall; that is, to fill up the interstices between the bricks with fresh mortar, replacing any greatly damaged bricks with new ones: but, as this is attended with considerable expense, a cheaper and more effectual mode is to brush over the entire wall with a mixture of Roman cement and water, as thick as it can be laid on with a brush. The wall having been previously brushed over with water to clear it from any loose materials, the mixture should be instantly applied; and it should be used as soon as made, or it will set in the vessel it was made in. If one coating of this liquid cement be not sufficient to fill up the holes, a second may be given, after the first has been two or three days laid on; or even a third, if necessary to render the surface of the wall tolerably even. An old dilapidated brick wall, in the Horticultural Society's Garden, was treated in this manner upwards of twelve years ago, and has ever since been almost as good as new. The coping of walls should be examined and rendered water-tight; otherwise, the water will be liable to get into the heart of the wall, and rot it. For the repair of copings, cement is admirably adapted; and, even if the coping should require to be entirely renewed, plates of artificial stone, formed of cement, will, in many situations, be found cheaper and better than any other. When a wall is in a bad state, and it is not considered desirable to bestow much expense in repairing it, the cheapest mode that we know of for keeping it standing for a great many years is, to plant ivy at its base, and allow it to run up; in which case the ivy will not only protect the sides of the wall, but will form a mantled coping to its top. When the boundary fence is of wood, it should be examined, to ascertain whether the parts are rotten "between wind and water" (that is, at the surface of the soil), which

is very frequently the case while the upper part of the fence is fresh and strong. In this case, the posts should either be entirely renewed, or the cheaper mode adopted of inserting fresh posts close to the rotten ones, of such a length as to reach two or three feet above the surface. By nailing these short new posts to the sound part of the old posts, the fence may be kept up during another lease. A full-grown hedge, with gaps in it, is one of the worst fences to repair; because young hedge-plants will never thrive among old ones. The only mode, in this case, is to intertwine the adjoining branches, and to insert stakes for retaining these in their position. The hedge will often be found too broad at top; in consequence of which, the light and air are too much excluded from the bottom, which becomes naked; and here the only remedy is to cut in the sides of the hedge, so as to reduce the width at top; when, after two or three years, it will become equally thick from the ground upwards.

230. *The walks, whether of gravel or pavement,* will hardly fail requiring to be taken up and replaced or renewed; and, as the underground drains are generally along the sides of the walks, both may be renovated at the same time. The edgings to the walks, if of box, will probably be overgrown; in which case they will require to be taken up and replaced by young plants from a nursery, unless the occupier be content to take up the old box, and plant it in rows in the interior of the garden, in the manner called by gardeners laying in, leaving only an inch or two of the plant above the surface, in which state it will commonly throw out fresh roots from the side shoots, and, in a year, be fit to plant out along the walks as edgings. Some gardeners plant old box at once as edgings, where it is finally to remain, burying the plants to within 2 in. of the ends of the shoots; but as, from the length of the old overgrown box, it becomes necessary in this case to bend the plants in planting them, and, consequently, many of them are broken, and thus are liable to die during the summer, it is better to make certain of plants that will live, by rooting the box first in nursery lines, as recommended above. In almost every case of renovation, of whatever material the edgings to the walks may have been made, whether grass, thrift, strawberries, brick, tile, slate, or stone, they will require to be taken up and replaced, if not renewed.

231. *The turf,* if there be any, if it does not require the surface on which it grows to be relevelled, may be renewed by digging it down, forming and consolidating the surface by raking and rolling, and afterwards sowing grass seeds; or, if expense be not an object, fresh turf may be procured from an old pasture. In many cases, however, all the renovation that will be required for turf will be the filling up of the inequalities of the surface with fine soil, rolling the whole firmly, and sowing grass seeds in the bare places after the first shower; then slightly raking it, and again rolling it after it becomes dry.

232. *The most important consideration,* however, with reference to renovating suburban gardens, is the state of the trees and shrubs. In almost all suburban gardens of twenty years' standing, this will be found to be most wretched. The ornamental shrubs will commonly be found to consist only of the coarser-growing kinds, which have remained and become vigorous, after having choked up and destroyed the weaker and more delicate kinds; and the ornamental trees will be found too large, overshading everything,

and rendering the ground damp and unproductive, and the atmosphere unhealthy. The fruit trees will generally be cankered, and producing little or no fruit; and the little which they do produce will have a bad flavour. The fruit shrubs, such as the gooseberry, the currant, and the raspberry, will be found overgrown, and crowded together for want of pruning and thinning. The only effectual remedy for these evils is, to root out the whole of the ligneous plants, and to introduce young healthy plants in their stead. There need be the less regret at doing this, because the kinds of fruit trees and shrubs, and of ornamental trees and shrubs, that were planted in suburban gardens twenty years ago, were very inferior to those which may now be purchased in the nurseries. There is another reason why it will almost always become necessary to root out the fruit trees in an old garden; which is, that their roots will, in most cases, be found too deeply buried in the soil. The main cause of this is, that they have been planted too deep at first; that is, the soil having been trenched perhaps 2 or 3 feet deep, previously to planting, the trees have been planted just as deep as they would have been on solid ground; in consequence of which, and of the watering and treading down the soil to the roots at the time of planting, the collar of the tree is, the very first year, 2 or 3 inches below the surface; and every year afterwards, from the additions made to the soil by manure, and from its swelling up in consequence of the pulverisation it receives by culture, the root of the tree becomes still more and more deeply buried, till, at the end of 20 years, the collar is perhaps 6 or 8 inches deeper in the soil than it ought to be. This burying of the collar is the grand cause of the unfruitfulness of fruit trees in small gardens; and, indeed, it is not too much to say in all gardens whatever; and this deep burying of the roots is just as hurtful to a gooseberry, a currant, or a raspberry, as it is to an apple, a pear, or a plum. In the case of flowering trees and shrubs it is equally injurious, by preventing them from flowering. If, therefore, old trees and shrubs of any kind are to be retained in renovating the garden, they will require to be taken up, and replanted with their collars rather above the surface than under it, so as to allow for the sinking of the ground, and to cause the tree, even when the ground is thoroughly settled, to have the appearance of growing out of a small mound. If we examine thriving trees in a state of nature, we shall always find that the collar (that is, the point of junction between the stem and the root) rises above the general surface, as shown in *fig.* 67. On the other hand, if we examine trees that have been planted by man in deeply trenched soils, we shall generally find that, though planted at first as shown in *fig.* 68., they will, after a certain number of years, have sunk, as shown in *fig.* 69.; or, if care has been taken to keep the ground about them level by adding fresh soil as it sinks, they will appear, as in *fig.* 70., with their collars completely buried, and their trunks rising out of the

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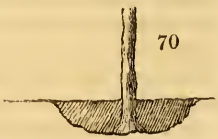
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soil like a post driven into it by art, instead of springing from a woody base formed by the roots, like trees and shrubs in an indigenous state, as shown in *fig.* 71.

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In replanting, either with trees already in the garden, and taken up in order to have their roots raised higher, or with young trees, they ought always to be planted on little hills, more or less in the manner shown in *fig.* 72.; so as ultimately to settle down into flattened protuberances, as in *fig.* 67. It may be asked how the ground is to be cropped close to the roots of trees so treated; to which we answer, that we have already shown in pp. 76., 77., the utter impossibility of fruit trees planted in dug ground bearing well, unless an undug space be kept all around them. There is not a single point in the whole culture of trees and shrubs that is of equal importance to that of keeping the collar of the trunk above the surface; and there is not one which is more generally either neglected, or by some means or other counteracted, not only in small, but in large gardens.

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233. *Where it is proposed to retain the ornamental shrubs or trees already existing in an old suburban garden*, they will very generally require to be taken up and replanted, no less than the fruit trees, unless they should be so large as to be of a timber-like size; in which case, as in a very small suburban garden they will be disproportionate to every thing about them, they ought to be rooted up entirely. The only remedy for trees which have been too deeply planted, besides taking them up and replanting them, is removing the earth which covers their roots, as deep as the lower part of the collar; but, as this would very much disfigure any garden, whether large or small, it is a remedy which we cannot recommend any one to resort to. In the case of the smaller shrubs, whether fruit-bearing or ornamental, such as gooseberries, currants, roses, &c., there need never be the slightest hesitation in rooting up such as have been too deeply planted, throwing them away, and replacing them with young plants from the nurseries.

234. *It may sometimes happen, where the soil is poor and shallow*, and the subsoil gravel, rock, or chalk, that fruit or ornamental trees or shrubs may be suffering for want of nourishment, and may, from this cause, exhibit canker or mossiness on their branches. In this case, the obvious remedy is to supply nourishment, which should be done, not by digging dung into the soil, but by top-dressing it with thoroughly rotten horse or cow dung, or with a composition of soil and some other animal or mixed manure. Where such trees stand in dug ground, the manure may be slightly forked in; but where they stand on turf, spreading it on the surface in autumn, and allowing it to remain there during winter, will be sufficient. Renovating fruit trees by top-dressing the surface has the double advantage of rendering them more productive of fruit, and of making that fruit of higher flavour. Even when trees have been too deeply planted, if their collars are laid bare, and the surface soil removed for 2 or 3 feet all round, to within 2 or 3 inches of the main roots, and afterwards the surface top-dressed, from the trunk as far as

the roots are supposed to extend, the evils of deep planting will be mitigated, it being understood that the surface is never to be afterwards dug. The fibrous roots are, by this treatment, tempted to come up to the surface in search of the nourishment afforded by the manure; and, whenever the greater number of the roots of a tree are near the surface, from the greater warmth in summer, and the influence of the air, it is certain to blossom and bear well, and, without being over-luxuriant, to be in a thriving state.

235. *The only remaining subject connected with the renovation of suburban gardens, is that of insects and other vermin.*—Where these have not been kept down by vigilant attention, the soil, owing to the state of closeness and dampness in which small gardens usually are kept, will be found teeming with snails, slugs, and worms; and the shoots of the trees with the eggs of moths and other insects. In winter, the snails and slugs will be found collected, for shelter and protection, under evergreens, among stones, or any similar materials that afford them shelter, and in the crevices of walls, &c. The most effectual mode, when they are in large quantities, is, to collect them by hand, and then destroy them; and, when they are less numerous, to water every part of the garden thoroughly and repeatedly with clear lime water, which, when it comes in contact with their bodies, effectually destroys snails, slugs, and worms. The eggs of insects attached to the trees should be rubbed off with a hard brush, and then collected by hand; and, early in spring, the progress of any that remain should be watched, and tobacco-water, lime-water, or soapsuds (which operate in the same manner as lime-water, but are longer retained on the plant, in consequence of the greasy medium in which the alkali is enveloped), should be applied as soon as the insects are hatched.

236. *In general*, we may observe that, though there may be some advantage in taking possession of a large garden, which has been planted for some years, on account of the fruit-trees being in a bearing state, and the ornamental trees being of a sufficient size to produce considerable effect, there is none whatever in occupying an old suburban garden. With all such, the best mode will generally be found to be, to root up all the trees and shrubs, and renovate the garden by improving the soil, &c., laying out afresh, and replanting entirely.

§ 6.—*The Garden Tools required in a Suburban Garden.*

237. *A garden engine* is of the greatest use in a suburban garden, as it affords the greatest facility for watering the leaves of plants, with the least possible trouble; and where this cannot be obtained, a syringe is indispensable. Two or three watering-pots will also be required, and at least one should have a very fine rose.

238. *The principal implements* required will be a spade, a small iron rake, a small fork, and a hoe; a trowel, and a sécateur or pruning shears. A pair of steps, a large pair of scissors, and a hammer for driving nails into the wall in training, will also be useful; and a small mowing machine may be added, if expense be not an object.

CHAPTER II.

COUNTRY VILLAS.

239. *Country villas*, even of the smallest size, differ from suburban villas, in not being regulated in the situation of the house by any street or road. Hitherto, we have been limited, by the necessity of keeping the front of the house in a line with the fronts of other houses; and by the right-lined boundary of the garden, as well as by its comparatively limited extent; but now we are released from these trammels, unless we except some cases where a plot of ground of a few acres in extent, may be bordered by straight lines, which is no great disadvantage in this comparatively large space, and more especially where the ground has an irregular surface. We shall, therefore, in these designs, be enabled to introduce greater variety, as well as a greater number of objects, in each design. If to irregularity of outline, and the extent of a few acres, irregularity of surface be added, and the choice left as to the situation of the house, all the leading desiderata necessary to make a fine place are present; and, whether such a place be produced or not, will, all other circumstances (such as climate, soil, water, &c.) being favourable, depend on the taste of the designer, and the liberality of his employer in regard to the sum to be laid out.

SECTION I.

GENERAL OBSERVATIONS ON COUNTRY VILLAS.

240. *The most important point of difference between a suburban and a country villa*, is undoubtedly the circumstance of the latter never forming part of a street or road: but there are several other distinctive marks of difference. In giving designs for suburban gardens, we have supposed, in almost every case, that the surface is flat, and the space limited; and, consequently, that the beauties to be produced must necessarily be included within the enclosure. In some cases, indeed, we have suggested that adjoining trees, and other objects might be admitted to view; and, in others, that unsightly objects might be excluded by trees; but, as there is in general, very little scope for exercising this kind of art in laying out street gardens, we have hitherto not said much on the subject. In the gardens of which we are now about to treat, however, and especially such as have an uneven surface, the exterior landscape necessarily forms a constant object of attention, in laying out the surface of the area within the boundary. Without a nice attention to the adjoining grounds, and the manner in which they are planted, built on, or laid out; and adapting the foregrounds and middle distances to them, as the case may require; the effect produced will not be entitled to be considered as landscape, in the artistical sense of that word.

241. *What constitutes an artistical landscape.*—It may be necessary to

remind the general reader that by a landscape, in the sense in which it is understood by artists, is meant a scene, verdant, architectural, or aquatic, which can be seen by the eye looking horizontally and directly in front, without moving the head; which consists of strongly marked parts, within a few feet or yards of the eye, forming what is called the foreground; which contains a number of parts in the horizon, sufficiently distant to appear greatly diminished in size, which is called the distance; and which is completed by an intermediate portion of scenery, neither so indistinct as the distance, nor so large and bold, nor so much in detail, as the foreground, which is called the middle distance. Such landscapes admit of infinite variety: 1. as to the extent of the space within which the three component parts of them, viz. the foreground, middle distance, and third distance, are contained; and, 2. as to the nature, number, and magnitude of the objects which form each of these component parts. One property, however, is common to every landscape that is satisfactory to the eye; viz. that it is composed of parts or distances, and that these are not less than three. The principle on which this is founded is, that no landscape can please that does not form a whole; and that three are the smallest number of parts in any object by which a whole can be produced. In addition to constituting a whole, a landscape may be expressive of different other kinds of beauty: it may be gay or gloomy, simple or intricate, and so on; and though the landscape-gardener may not always have it in his power to confer much expression of this kind, yet he is always able to form a whole, and, if he does not do this, he is without excuse.

242. *The distant scenery* should always be considered in laying out a country villa. Having endeavoured to give the general reader a clear idea of what constitutes an artistical landscape, our next object is to impress on his mind the proposition, that in every well laid out place there will be a considerable number of views, consisting of at least three distances; all more or less striking or captivating, and all more or less forcing themselves on the attention of the spectator. These views are to be obtained from the windows of the principal rooms of the house, from the walks of the pleasure-grounds, or from seats placed in different parts of them. If, in moving along the walks, one part of the scenery be found just as interesting as another, and none capable of attracting much attention, then the artist has failed in his attempt to create a series of landscapes. It does not follow from this that he has not created beauties of another kind; for there may be handsome beds of flowers, elegant sculpturesque objects; and fine specimens of trees and shrubs: but these beauties belong to floriculture, architectural decoration, and arboriculture, and not to landscape-gardening. Neither does it follow that every step in a pleasure-ground ought to produce a new and striking landscape, though this is practicable under very favourable circumstances; and we shall show, from a garden of less than an acre in extent, how upwards of a score of striking landscapes may be produced in almost immediate succession. Nor is it necessary that every landscape should have its third distance beyond the limits of the area under the control of the landscape-gardener: on the contrary, this distance may always be obtained within the grounds when it cannot be found beyond them; though the views, under such circumstances, will be confined rather than grand. It is principally to effect this sort of pleasing, gardenesque, or picturesque views, that sculptural and architectural objects are introduced into gardens.

243. *The house.*—In proceeding to lay out the grounds of a country residence, the first point that requires to be determined is, the situation of the house and domestic offices; the latter including the kitchen-court and the stable-court. We have already said so much on the advantages of a situation for the house so far elevated as to be commanding, and on a soil so dry, and a surface so open, as to be healthy, that we shall not enlarge further upon these subjects here; but the site of the house, relatively to the public road and the boundary fence, remains to be considered. Where there are offensive objects in or near the boundary, there is a motive for placing the house at a distance from it; but, where this is not the case, the house may be set down on the spot containing the best views, provided that spot allows of properly placing and disposing of the offices and kitchen-garden. Where it is intended that the establishment shall be small, there will often be found great convenience in placing the house near the public road and main entrance, in order to lessen the labour of servants in attending the gates. On the other hand, in the case of complete establishments, a situation at some distance from the public road has the advantage of concentrating the business of the establishment, and thus bringing all the servants more immediately under the eye and control of the master and mistress. Where it is desired to make a place look larger than it is, an advantage is gained by placing the house at a great distance from the entrance-lodge; because the approach road is thus lengthened, and the impression on the stranger, in regard to the extent of the place, is heightened in proportion to the length of space which he has to travel over between the entrance-lodge and the front door of the mansion. This idea of extent is greatly increased when the approach road separates into two branches at a short distance within the entrance-gates, and where one road is devoted to going to the mansion, and the other to returning from it; provided, however, that the one road is not seen from the other.

244. *The offices.*—It is almost needless to observe that the kitchen-court should always be immediately connected with the mansion; and that in some cases, as in small houses, the kitchen and other offices should be, in a great measure, under the principal floor of the house. The drying-ground is most conveniently placed between the kitchen-court and the stable-court; and between the latter and the drying-ground is a suitable situation for a poultry-yard, which, in our opinion, is an essential addition to every kind of residence which contains an acre or two of land; and, also, for the cow-house and piggery, where only one or two cows are kept, and no more pigs than are necessary to eat up the refuse. The stable offices should be as near as possible to the kitchen offices, in order that the servants employed in them may be within hearing of the bells by which they are called; that as little time as possible should be lost after ordering a carriage, till it appears at the door; and that the master may inspect his horses, carriages, and dogs, with little trouble, during severe weather.

245. *The extent of the accommodation of the house and offices* will vary with the style of expenditure of the family; and the style of architecture will depend on the taste of the proprietor; and, therefore, neither require to be here enlarged on. In order that access may be readily obtained to both the kitchen and stable offices by servants and tradesmen, without crossing before the entrance-front of the house, these offices should always be placed on that side of the house which is next the entrance-lodge.

246. *The kitchen-garden* should be near the stable offices, for the supply of manure; and so placed, that it may be at no great distance from the house, for the convenience of daily bringing to the kitchen the vegetables which it produces. It is also desirable to have the kitchen-garden so situated that ready access may be had to it by the master and mistress; because, in all small places, it is a part of the out-door establishment which is more frequently visited by the family than any other; being always interesting from the variety of operations carrying on in it, and the constant succession of productions in which the mistress of the family, more particularly, takes a daily interest. If the kitchen-garden be placed near the offices, it will necessarily be situated between the house and the entrance-lodge; and, consequently, be readily accessible to carts bringing manure, or soils, or other materials for the garden, from a distance, and also to the visits of neighbouring gardeners. In many small places, it is, for this reason, convenient to have the kitchen-garden near that part of the boundary which lies along the public road, in order to have a carriage entrance directly from the latter. This is also very frequently the case with the stable offices, in order to admit of bringing in hay, straw, corn, &c., without carting these along the approach-road to the mansion. Where, however, the house is placed at a distance from the public road, this can neither be the case with the kitchen garden nor the stable offices; for, in residences of limited extent, nothing will compensate for having these essential parts of an establishment at a distance from the centre, to which they are to contribute their quota of comfort and enjoyment. The kitchen-garden should consist of a wall for the growth of the finer hardy fruits, which wall is generally made to surround the enclosure; borders, protected by the wall, or by hedges or temporary screens, for growing early crops; open compartments, unencumbered by standard trees, for the culture of the main crops of culinary vegetables; a reserve-ground, or nursery, for bringing forward plants in their young state, till they are fit to transplant where they are finally to remain, as well as for keeping a stock to supply blanks occasioned by accidental deaths; and a forcing-ground. The borders, and the compartments of the main garden, are generally laid out in the form of a parallelogram or square, and enclosed by a wall with a border on the outside, in order that fruit trees may be trained on that side of the wall, as well as on the inside. The reserve-garden and forcing-ground are usually included in a small square or parallelogram; at one end, or on one side, of the large square, and in or near this small square, is generally placed the gardener's house. The forcing-houses may consist of pits of different dimensions, heated by flues or hot water; of wooden frames, placed on open brick-work, and heated by outside linings of dung, tan, or leaves; and of walled pits, not heated by artificial means, but simply protected by a covering of glass. Forcing-houses, in the general sense in which that expression is understood, may now be altogether dispensed with in moderate-sized gardens; and thus the great expense both of their original construction, and annual repairs of glass, &c., may be avoided. A forcing-house, such as was constructed thirty or forty years ago, consists of a glass roof, more or less lofty, and placed against a high wall; a glass front, and glass ends; with the interior laid out with at least one walk, which is generally paved; or with a raised bed in the centre, surrounded by parapet walls, flues, and a paved walk. A pit, on the other hand, such as is now built in the best forcing-grounds,

whether large or small, has the side and end walls of masonry; the back wall seldom above 7 or 8 feet high; no part glass but the roof, and commonly with only one narrow walk at the back. The saving, both in original construction and in future repairs, is obvious; and every good gardener knows that in such houses the forcing is not only conducted with less labour and expense, but in general produces better results, than in large houses.

247. *The conservatory and flower-garden.*—The conservatory has been already treated of, as an appendage to the mansion, in pp. 54. to 57. inclusive, and several designs for conservatories and other kinds of plant-houses will be given in an after part of this work. To be truly enjoyed as a luxury, it ought to be connected with the house, and entered from one or more of the principal living rooms. The flower-garden ought to be near the conservatory, in order that it may be at all times reached from the house in a few minutes, and also that it may, by its richness and high keeping, add to the appearance of art and refinement in the immediate vicinity of the mansion. Conservatories may either be of glass on all sides, and connected with the mansion by one end; or they may be placed lengthwise against the mansion, or against a wall projected from it, or against the offices; in either of which cases, only the front and the roof need to be of glass. The latter kind of conservatories, or green-houses, are always heated and managed at less expense in the winter season, than those which are of glass on all sides; and the plants in all conservatories always look well in an inverse proportion to the artificial heat required. The main reason why a conservatory with glass only on one side requires so much less artificial heat in the winter time is, that the glazed side is generally contrived so as to front the south; and, while this and the glass roof admit all the rays that the sun gives at that season, the thick wall on the north side protects the conservatory from the cold north winds. A very convenient arrangement, where the aspect is suitable, is, to place the conservatory against the exterior wall of the buildings of the kitchen-court; and, between this and the kitchen-garden, to form a flued conservative wall against the drying-ground, poultry-yard, and stables, and to continue it on, either in straight or in curved lines, or in a combination of these, as far as the wall of the kitchen-garden. The flower-garden might, in this case, be placed in some part of the lawn in front of the conservative wall, that is to say, the general flower-garden; because, where there is a great attachment to plants, and the place consists of two or three acres, there may be an American garden, an ericetum, an alpine garden, a marsh garden, an aquarium, &c. (which may all be considered as belonging to the class of flower-gardens), in various parts of the grounds.

248. *The drainage* of the house and offices, and of the entire place, may next be taken into consideration. In the country, in general, there are no public sewers, as there are near large towns; but, nevertheless, there are roadside, or field, ditches, and natural brooks, which receive the surface water produced by the rains on the given tract of country; and into these all drains, whether for drying the soil, or carrying off the waste water from the dwelling-house and offices, must be made to empty themselves. In general, there ought to be one main drain from the house, through the centre of the courts of offices, to a large liquid manure tank; or, what is preferable, there may be two tanks, that the one may be filling while the other is being emptied. If the manure produced in these tanks be properly valued, and, consequently,

carried away as it is duly fermented, there will seldom be any overflow; but nevertheless, to provide against the possibility of this occurring, there ought to be a drain from the tanks continued to the boundary of the property, and thence into the nearest ditch or brook. This drain, between its origin at the house and the manure tanks, ought to have all the communications with it furnished with proper traps, to prevent the rising of smells; and, where it communicates with the tanks, and also at its commencement and at its exit into the public drain, there ought to be either cast-iron gratings, or water traps, to exclude rats.

249. *Traps to prevent smells* are made of cast iron, and they are generally from 6 in. to 1 ft. square on the upper surface, according to the quantity of water that is supposed likely to pass through them. The construction and action of such a trap will readily be understood by the section, *fig.* 73.; in which *x* is the grated covering to the basin of the trap, and *y* the funnel through which the water escapes to the drain. Water falling into this trap through the cover (*x*) escapes by the funnel (*y*); but the bell-shaped cover placed over this funnel, by dipping into the water all round it, prevents the escape of air upwards. In order that such a trap may be protected from the effects of frost, it is convenient to have it sunk 1 ft. or 1 ft. 6 in. in the ground, and covered with an ordinary cast-iron grating, on a level with the surrounding surface. The funnel may communicate with the drain, either through the top or sides. As the basin of the trap will be liable, after being a certain time in use, to become filled up with sand or other earthy matters, the grated cover to which the bell is attached is not fixed to the basin, but may be lifted out at pleasure, to admit of emptying the latter.

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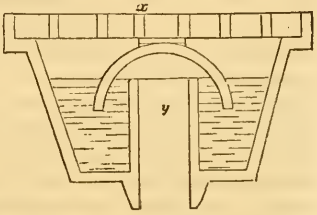

250. *A water-trap*, for the purpose of preventing the progress of rats along a drain, is formed by sinking a pit in the bottom of the drain, say 1 ft. 6 in. or 2 ft. deep, and suspending a piece of flagstone across it, from within half an inch of the cover of the drain, to within 6 in. of its bottom; the flagstone being built into the sides of the drain and pit. This construction will readily be understood by the vertical section, *fig.* 74., and the horizontal section, *fig.* 75. In these sections, *a a* represent the line of direction of the drain; *b* the flagstone which forms the dip or trap; and *c* the flagstone which serves as a cover, and which admits of being taken off without disturbing the dip-stone, in order to clear out the well, or pit, of the trap. The action of such a trap is sufficiently obvious. No animal can pass it without diving under the dip-stone; and this, it

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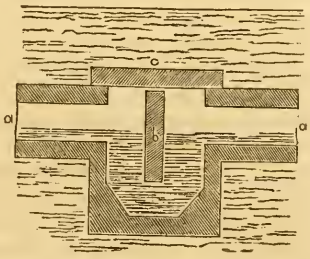

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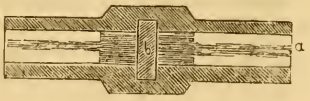

is ascertained from experience, rats will not do, unless where the water is clear, and both sides of the trap are fully exposed to the day, in which case they will dive under the dip-stone and ascend on the other side, though the stone should descend several feet into the pit. It should be observed, that only a small space of about half an inch is left between the dip-stone and the cover; this space is essential, in order to admit the passage of air; for though the water would escape without it, yet it would be at a much lower rate. It may be useful to observe here, that all underground drains from offices, or from any part of an estate, which are intended to carry away night soil, or any earthy matter, ought to have a certain slope or inclination; with the bottom of the drain not flat, but concave, and generally so much so as to form the section of a semicircle. A semicircular bottom, and a slope of 1½ in. in 10 ft., it has been ascertained by builders, will enable any drain, with a tolerable supply of water, to carry off all the nightsoil suspended in it; but, where there are sand or small gravel, pieces of bones, broken crockery, and other matters of that description, to be carried away, the slope requires to be at least 3 in. in 10 ft.

251. *If the subsoil of the property be dry*, very few drains in the grounds, for the purpose of drying the soil, will be required; but, if the soil be loamy, or on a retentive bottom, every part of it will require under-draining. The kitchen-garden must be more thoroughly drained than the general surface, which is to be laid down under grass, or planted with trees, because the excellence of culinary produce depends chiefly on the culture of the soil; and an extra attention to drainage must be paid in the flower-garden, and in all those parts of the lawn (especially such as are near the gravel-walks) which are liable to be much walked on in autumn or spring. Whether the subsoil be naturally dry or wet, every walk and road, whether in the kitchen-garden, the flower-garden, the pleasure-ground, or forming the approach roads to the mansion, and the branches to the offices, will require to be drained, for the sake of absorbing as completely as possible the water that falls on them during heavy rains, or is produced by the thawing of snow. For this purpose, a drain should be conducted along one side of the walk, under the gravel in the kitchen-garden, and either under the gravel, or under the turf, in the pleasure-grounds; and to this drain small grated openings should be made, at regular distances, along one side of the walk. Where the walks in the pleasure-ground are of great length, branch drains require to be introduced at certain distances in the lowest situations, in order to conduct the water collected in the drains along the walks to the nearest public drain. The drains along the walks should be what are called box or barrel drains; the former having a bottom and square sides, with a flagstone cover, as in *fig.* 76.; and the latter being a circular cylinder of brickwork, a section of which is shown in *fig.* 77. Small iron or stone gratings on the surface communicate with the drains by short upright shafts, 9 in. square in the clear within; and, in the bottom of the drain, immediately under each shaft, a pit is formed, and walled on the sides, a foot square within, and from 1 ft. to 2 ft. or more in depth, as in the section *fig.* 78. The use of this pit is to receive the sand that is carried through the grating with the water, immediately after very heavy showers in

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summer; and thus to prevent the sand from being carried along the drain, and in a few years choking it up. Once a year, the grating at top is taken off, and the deposit of sand taken out with a spade having a kneed blade; and by this means not only may the drains be kept quite clear and effective for many years, but much smaller and less expensive drains may be made at first. Where the subsoil is sandy, gravelly, or rocky, and where it is not considered essential to use the walks immediately after rain, drains of the box or barrel kind may be dispensed with, and common rubble drains formed by filling up a trench with round stones, to within a few inches of the surface, as in *fig.* 79., and terminating it by a somewhat coarser portion of the common gravel used in forming the walk, through which the water will percolate, throughout the whole length of the drain. In flower-gardens, and indeed in extensive shrubberies, brick traps of the kind described above may be dispensed with, and the bell-trap represented in *fig.* 73., or some other trap of the kind, may be made use of; but, in this case, these traps must be cleaned out after every shower of rain.

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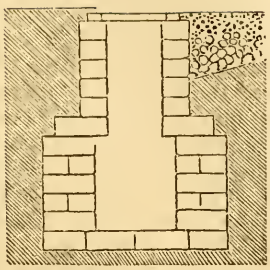

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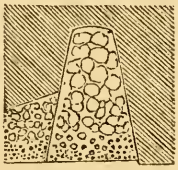

252. *Drainage map.*—In all extensive establishments, and even in small ones, where the drainage is in any degree intricate, it is desirable to have a map exclusively devoted to the under-drains, which should be accurately laid down on it, and accompanied by sections and dimensions, taken in different parts of the course of the drains, and projected on the plan alongside of the points where they were taken. Every successive addition and alteration should be introduced in the plan when made, and accompanied by the date. The use of such a plan is twofold: 1. to show the precise situation of the drains already existing, when any new drain is to be made; and, 2., as a guide when any drain becomes stopped up, and the point of stoppage is uncertain. By penetrating into the suspected drains at different distances, though only with a boring auger, or even in some cases with a crowbar, an immense deal of labour may be saved in detecting the seat of the evil; especially in cases where the principal servants have been changed since the drains were last opened.

253. *The pleasure-grounds*, in places of only two or three acres in extent, may generally be considered as including the whole of the grounds, with the exception of the space occupied by the house and offices, and by the kitchen-garden. The number and the direction of the walks through this space will depend on various circumstances, but chiefly on the taste of the family for flowers and shrubs, and the annual expense which they are willing to incur in keeping the grounds in order. In general, the walks should be so far apart, or so hidden or disguised by undulations of the surface or by planting, that more than one walk shall never be seen at a time. In irregular surfaces, therefore, it is obvious that the walks may be much more numerous than in such as are even or flat; and, in surfaces richly varied by groups of trees or

shrubs, the walks may be closer together than where the surface is chiefly in naked glades of lawn. The cheapest-kept pleasure-ground is, generally, that in which there are fewest walks, and broadest glades of lawn ; while the most expensive are those where the surface is full of inequalities, the groups of trees and shrubs numerous, and the glades of lawn narrow. In general, in proportion as the surface of the ground is varied, so will be the beauty produced in any given space ; more pictorial effect being found in one acre of undulations, than in three of level surface, the art and skill displayed being in both cases alike.

254. *The direction of the walks* should never appear to be forced, or to consist of bends made obviously for the sake of rendering the walk longer, or of avoiding a straight line. The direction may be straight or curvilinear, according as the one or the other may be required on account of the objects at which the walks are to touch ; or apparently occasioned by obstructions on the ground, either natural or artificial. In curvilinear walks, no bend should ever be made that has not an obvious cause in the disposition of the flower-beds, or of the groups of trees and shrubs placed along its margin, or in the inequalities of the surface of the ground. Thus, if it be thought desirable to have a curved walk, as shown in *fig.* 80., flowers or shrubs should be planted, as shown by the dotted lines, to give an apparent reason for the curves. Straight walks, where they are introduced, should have an obvious reason visible for their being straight; such as an accompanying wall, a row of trees at regular distances, or a covering of trellis-work, &c. In large places, the pleasure-ground, and consequently the walks belonging to it, are generally confined to grounds on one or on two sides of the mansion; while the grounds on the opposite side are considered in the nature of park scenery ; but the grounds of country villas, such as those under discussion, are, as already observed, generally considered as consisting wholly of pleasure-ground; and, consequently, the walks are carried through the scenery on the entrance front, as well as on the opposite side of the house, or what is called the lawn front. The grounds on the side next the entrance front, however, being more exposed to strangers coming along the approach road, have generally fewer walks, and these are accompanied by groups more frequently of trees and shrubs, than of flowers ; and by scenery, generally in a subordinate style of decoration. As the main walk through the pleasure-grounds generally requires, on the side of the entrance front, to cross the approach road, if the surface be much varied, or expense be not an object, the walk may cross the approach on an archway thrown over it, or by a tunnel carried under it : in either case, the road being concealed from the spectator on the walk, and the walk from the spectator on the road, by planting. The effect of this arrangement is greatly to increase the apparent extent of the grounds; and, indeed, in places where the surface is naturally varied, and the subsoil dry, the spectator may be led three or four times over the whole of the grounds, while, as he every moment enters on new scenery, he fancies he is traversing a place of three or four times its real extent. The great art of managing this description of scenery consists in the judicious use of tunnels, bridges, and raised surfaces in the form of wavy ridges, having their sides clothed with evergreens, and walks along their summits, and in the narrow winding valleys between them. Those who have never seen this kind

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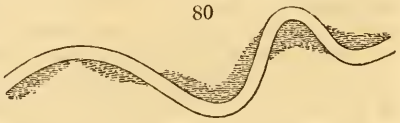


of art applied to garden scenery will scarcely credit how easy it is by it to conceal one walk from another closely adjoining it; and what a magical effect may be produced in a very small space by this kind of landscape gardening.

255. *On varied surfaces*, the general principles which we have laid down for the direction of walks must be taken in connexion with the principle of displaying to advantage such distant views as are considered good, and disguising or concealing such as are indifferent or bad. The object is, to show as many handsome landscapes as possible, and to conceal all disagreeable objects. Thus, the walks which are conducted round any place should, as already observed, p. 157., conduct to all the fine and striking points of view; so that, while none of these escape the attention of the spectator, no inharmonious or offensive object obtrudes itself on his notice.

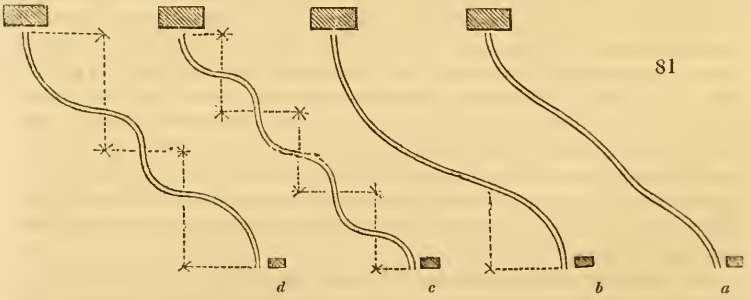
256. *The breadth of pleasure-ground walks* may bear some proportion to the size of the place; though they should seldom be narrower than 6 ft., and, except in the immediate neighbourhood of the house, should rarely be broader than 12 ft. In general, there ought to be a main walk proceeding from the house, and making, as it were, the tour of the place; and this walk, even in small residences, may commence at the house in a terrace parallel to the walks, and 10 ft. or 12 ft., or more, in breadth; and branch out to the right and left into main walks, commencing of the width of the terrace, or nearly so, and gradually diminishing, till they are at such a distance from the house as not to be seen by the eye of the spectator from the terrace, where they need not exceed the width of 6 ft. or 7 ft.; which width may be continued throughout the remainder of their length. This is done in the grounds at Ken Wood, views of which are given in an after part of this work; and the effect is at once to increase the grandeur of the scenery about the house, and to add to the apparent grandeur and length of the walks proceeding from it. The groups of trees and shrubs, or beds which are to be dug and kept planted with flowers, ought always to be separated from the walk by a verge or margin of turf; which, for the convenience of mowing, and of always presenting a healthy green surface, should not be less than 2 ft. in width. This applies to all the open parts of the pleasure-ground scenery; but, where the walk proceeds through dark shady woods, the trees and shrubs may be brought close up to it; and, the ground being clothed with the branches of the latter, their appearance will leave no room to regret the absence of turf. Even in open pleasure-ground scenery, a tree or a shrub may sometimes be planted close to the edge of the walk, and may occasionally project partially over it, for the sake of variety, and in order to produce particular effects. In this and every other case of the application of general principles and rules, such deviations may be made as are justified by the striking nature of the results; and it often happens that those features which principally distinguish one place from another, are either the results of fortunate accidents, or unavoidable deviations from ordinary rules.

257. *Grass walks.*—Besides gravel walks, there ought, in every case where there is a lawn of an acre or two in extent, to be either broad margins of turf to the main walk, running parallel to the gravel, on which persons may walk abreast with those on the hard surface; or glades in the interior of the scenery, so contrived as to admit of two or three persons making the tour of the place on them, instead of doing so on the gravel. In short, it ought never to be forgotten, that the enjoyment of walking on turf is to most persons much greater than that of walking on gravel; and that the preference given to the

latter material, for what may be called the every day walks of a place, is owing to its firmness and dryness in moist weather, or after rain.

258. *The approach road*, next to the house and offices, is one of the most important features of a place, not only on account of its uses, but because it is that by which an impression, favourable or unfavourable, is first made on a stranger. It is, or ought to be, a walk or road fit for horses or carriages, from the entrance-gate of the premises, to the entrance-door of the mansion; formed and kept in a high style of art, corresponding with that displayed in the other component parts of the residence. It should be as different from a turnpike-road or public lane as park scenery is from that of a common grass-field or meadow. As it may be advisable to consider this important feature somewhat in detail, we shall endeavour to show how a high character of art may be conferred upon it, in its direction, in the slope or inclination of its surface, and in its material, margin, and accompanying scenery.

259. *The line of direction between the entrance-gate and the mansion*, in places laid out in the geometrical style, is in general straight, in the form of an avenue; but in places laid out in the modern manner, and more especially in small residences like those under consideration, it is always more or less curvilinear. Now, in order to give these curves a character of art, they ought to have a certain uniformity in their degree of curvature; and the number of curves ought to be such as to give a character of regularity, or symmetry, to the whole line of road. To have a character of art, each separate curve ought to proceed, from its commencement to its termination, in an uniform uninterrupted degree of curvature; as opposed to the curves of natural paths, carried across meadows or commons, in which curves are often to be found of so undecided a character as to present tremulous-looking lines, instead of uniform bends or curvatures. To constitute regularity among the curves, they ought all to be nearly of the same length; to preserve unity, they ought to be so united as not readily to discover where the one curve begins and the other ends; and, to constitute symmetry in the entire road, the curvatures which form one half of it ought to be balanced by those of the other half. This may, perhaps, be more readily explained by lines than by description. In *fig.* 81., the lower



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extremity of each road, indicated by double lines, is supposed to be the entrance-gate, and its upper extremity the entrance-door of the mansion. Supposing the space between the gate and the mansion a common grass-field, with no interruption of trees or ditches, but with some very slight inequalities; then the track of road which would be formed between these two points by carts or carriages would probably be somewhat in the manner of the line *a*,

which is not straight, and yet can scarcely be called curved. To render this line simply artistical, each curve may be made uniform in its degree of curvature, as shown at *b*. To produce regularity in the line of curves, they ought to be all of the same length and curvature, as shown at *c*; and this line may be raised to a higher character, and rendered symmetrical, by forming the two extremities of two curves of the same size, and by uniting them with smaller curves, as at *d*. The proof that this last line is symmetrical is, that if separated into halves, neither half would form a whole; whereas this would be the case with the line *c*. It may be useful to remark with reference to the first line (*a*), that all roads or lines formed by the traction of horses, or other draught animals guided by man, commence, say, after a gate has been gone through, by being inclined somewhat to the right; and terminate a little before the next gate, or other obstruction, by being turned somewhat to the left. This is supposed to be produced by the driver exercising his authority, by means of the whip and reins, at the beginning and ending of a line more than he does in the middle of it. Be that as it may, natural roads across fields, from one gate to another, will generally be found to consist of a short curve to the right immediately within the entrance-gate, a short turn to the left immediately within the gate of exit, and a nearly straight or indefinite line between the two. In ploughed fields, also, in former times, where an absolutely straight furrow was not, as at present, considered a desideratum, the direction of the furrow was serpentine, for the same reasons as those just given. We state these facts here, to show that a curvilinear approach road is quite natural; though the imitation of it by man, in laying out a place, must, as in imitating nature artistically in other cases, not be a mere fac-simile repetition, but a resemblance according to art. In addition to the beauties of regularity and symmetry in the line of direction of an approach road, expression, or character, may be added. Thus, the expression of grandeur may be given by the increased size of the curves, and the general simplicity of the whole line (as shown at *b*); that of picturesque beauty, by very sudden changes in the direction of the curves, and by the partial introduction of irregularity; while a certain degree of elegance will be produced by gentle curves, some of which are very much prolonged, so as to be approaching to straight lines. The kind of artistical beauty least adapted to a curvilinear approach road, is regularity, as shown in the line *c*; which consists of a repetition of curves of the same form and magnitude, from one end to the other; and which, viewed merely as a curved line, and without reference to what might be effected by the adjoining scenery, if it were carried into execution, must be allowed to be monotonous. The grand source of character, however, in the line of direction of an approach road, is produced by the intervention of objects, natural or artificial, which set at defiance both regularity and symmetry, such as a rock, the base or talus of a hill, a building, a group of old trees, a stream, a pond, or water in some other form; all of which most commonly occasion sudden and picturesque deviations from regularity in direction.

260. *The inclination of the surface of an approach road* is subject to the same general principles as its line of direction. In a common road across a field, its surface follows every inequality in that of the pasture, and is, perhaps, nowhere either regularly sloping or regularly level; but, in the artistical imitation of such a road, the surface will proceed in a series of regular slopes, joined with spaces approximating to levels, on exactly the same prin-

ciple as the regular curves, or nearly straight lines, constituting the line of direction. It will be taken into account, that the general surface of the ground over which such an approach is to be formed will have previously been rendered artistical, by the smoothing down of all minor protuberances, the filling up of small inequalities, and the obliteration of all minor elevations and depressions which interfere with the regular flow of outline, over the entire surface of the park or pleasure-grounds. The inclination of the surface of an approach ought also to be considered with reference to the effect which it has on the character, or expression, of the house. Every one feels that a house which is approached by an ascending road appears a far more dignified object, than one the road to which is level or descending. In order to obtain ascent in the direction of the road between the entrance-lodge and the front of the mansion, the former ought to be placed on a lower level than the latter; and the ascent should be either regularly distributed over the whole length of the road, or, what is preferable, it may be very gradual at first near the entrance-lodge, and increase as it proceeds towards the mansion. In residences of limited extent, where the approach is necessarily short, the road can seldom, with propriety, descend from the lodge, and afterwards re-ascend to the mansion; nevertheless, there are exceptions: such as when a brook or lake is to be crossed at no great distance within the lodge, to which the road may descend, and, having crossed it, may reascend immediately afterwards, and continue rising till it reaches the house. In approaches of considerable extent, there may be various ascents and descents between the entrance-lodge and the mansion, provided none of the points of ascent are as high as the ground on which the mansion stands; because, in that case, they would interfere with its dignity. In general, where there is great variety in the surface of the grounds in the limited space over which the approach road is to pass, the rises and falls in the inclination of the road will be numerous; though care must always be taken that the last variation before arriving at the house is one of ascent, and not of descent. On the other hand, where the variations on the surface are very gentle or very few, and where, as in all small places, the approach is not very long, there may be an ascent from the entrance-gate to the front of the mansion, either regularly distributed throughout, at the rate of so many inches of rise in a yard or pole of length, or the rate of inclination may vary in different parts of the road. One of the finest descriptions of approach road that we can imagine is, where a road of several miles in extent is made to wind its way through hilly or mountainous scenery at one uniform rate of ascent, till at last it arrives at an open level area containing the mansion.

261. *The materials of which approach roads are formed*, to be artistical, ought not to be those used in the common roads of the country: for example, if the common roads are Macadamised with granite, then the approach road ought to be gravel; or, if the common roads are gravelled, as in most parts of the neighbourhood of London, then the material of the approach road ought to be gravel of a finer kind, such as that of Kensington or Bayswater; or the approach may be Macadamised with granite, flints, blue limestone, or sandstone. The artistical effect of the materials, whatever they may be, of approach roads, may be heightened by the use of a heavy roller, so as to render them perfectly smooth and even; and by keeping them at all times free from weeds, horse-droppings, and other offensive objects.

262. *The margins of an approach road*, to be artistical, ought not to be rough like those of a common road through a field; and, above all things, they should not have footpaths running parallel to them, with a gutter between, as in the case of public roads. The surface of the road ought to be on a level, or nearly so, with that of the lawn or grass on each side: it ought never to be raised above it, or to be rounded in the middle; nor ought it to be more than one inch sunk beneath it. The reason why the gravel ought not to be raised above the grass is, that the appearance produced gives the idea of the gravel in the road having been carted there, and laid down on the natural surface; whereas, when it is kept level with, or an inch beneath, the surface, the expression is conveyed of a proper foundation, or preparation, having been made for it. The reason why the margin ought to be one smooth, definite, delicate line is, that such a line is gardenesque, which is more likely to be the style employed in planting along an approach road through an open lawn, or through the park scenery of a small place, than the picturesque. If, however, the picturesque style of planting be employed, then the line of demarcation between the grass and the gravel may be indefinite, broken, and irregular, as in the case of walks with picturesque margins.

263. *The scenery accompanying an approach road* will, in all ordinary cases, and especially in small places, consist chiefly of groups of trees. Shrubs are seldom admissible along such a road, because, as its sides are generally supposed to be pastured by sheep or cattle, the shrubs would require fences for their protection. In planting along an approach, two objects ought to be chiefly kept in view: to dispose of the trees in such a way as to account for the curves of the road, and to arrange them so as to form suitable foregrounds to the scenery beyond. Subordinate objects are, to prevent two turns of the road from being seen at the same time; to conceal the house from the approach road till the spectator is near enough to see it in a bold and striking point of view; and, above all, to prevent it from being seen from the entrance-lodge, or from the road immediately within it, as that implies a limited extent of grounds, destroys the idea of seclusion, and shows the house without due preparation.

264. *The width of approach roads*, in very small places, where only a one-horse carriage is kept by the proprietor, need not be more than 8 ft.; because, when two such carriages meet, each driver can draw his horse to one side, so as to have one wheel on the turf, and may thus pass without difficulty. But where a two-horse carriage is kept, and, indeed, in every case where the mansion is of a respectable size, however small the grounds may be, the approach road should not be less in width than 12 ft. Indeed, much of the dignity and grandeur of every place depends on the walks and roads being of a good breadth, and always being highly artistical in their material and keeping.

265. *The general surface of the ground*, exclusive of what is occupied by the buildings and the kitchen-garden, requires to be rendered artistical, either in the geometrical style, by forming it into regular levels or slopes; or in the modern manner, by merely polishing the surface, by reducing roughnesses, protuberances, and petty inequalities, so as to form it everywhere into flowing lines, consisting of curves of various degrees of curvature and extent, insensibly gliding into each other, or into levels or slopes. The operations of levelling and smoothing are most conveniently performed before beginning

to lay out the walks or roads, or to mark off the places for planting, or to trench the ground.

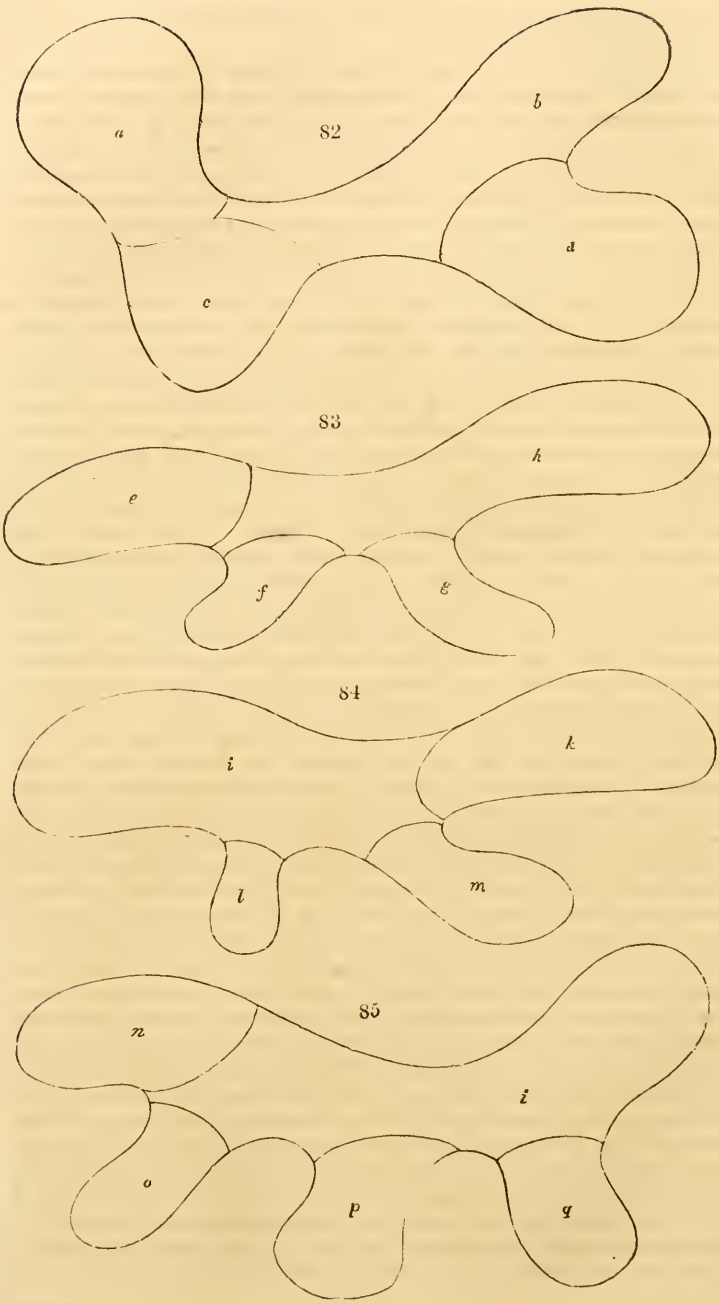
266. *Trenching.*—The use of trenching ground which is afterwards to be covered permanently with grass, or trees and shrubs, is, to enable the roots of the grass and other plants to reach a greater depth, and thus to be more out of the reach of drought in summer; also, to increase the capacity of the soil for retaining water, in order to keep the grass, as well as the trees and shrubs, green during the warm season. By trenching also, in connexion with manuring, draining, irrigating, &c., as already described, the growth of the trees and shrubs, immediately after being planted, will be much more rapid, and the final effect desired by the planter much sooner attained. It must not be forgotten, also, that the effect will be equally astonishing on the growth of the grass as on that of the trees and shrubs; and thus, not only a more intense green turf will be produced, but a greater quantity of hay and pasture for milch cows or sheep. We mention hay and pasture, because in many places of only two or three acres in extent, and in all places of five acres and upwards, that are not over-planted, a proportion of the lawn, or grassy surface, may be mown for hay every year; and portions of surface, also, may be hurdled off, for being pastured by cows or sheep. By some, no doubt, this kind of management may be disapproved of, as interfering with the smoothness and high polish of the lawn; but by others it will be considered as adding greatly to the value of a country residence, and to the interest and variety of the operations carried on in one.

267. *The boundary fence* to small places should, in most cases, be a wall, as being that which is most impervious to the smaller animals. Close palings of oak or larch, or of some other kind of wood, Kyanised, may be used; or a wall about 3 ft. high may be built, and a hedge placed immediately within it, and cut as it advances in growth, so as to form a continuation of the height of the wall; which, in this case, would be sufficient to keep out vermin at the base of the hedge, while the upper part of the fence would answer all the other purposes of protection and defence. A deep ditch on the outside, and a thorn hedge inside, will also form a good boundary fence; but, where the soil is a deep sandy loam, a hedge of holly is the best of all.

268. *Planting.*—Trees and shrubs are distributed over the grounds of a residence, because these objects are considered the most effective in producing the kind of beauty which is desirable in the country. To trees and shrubs are added flowers, as minor ornaments. The question that we are now to consider is, the principles to be followed in the distribution of the trees and shrubs, and of those finishing ornaments, the flowers. The two sources from which we naturally seek instruction in this matter are, the practice of planters and landscape-gardeners hitherto; and the mode in which trees, shrubs, and flowers are distributed in nature. Till within the last two or three centuries, the number of trees, shrubs, and common garden flowers, in cultivation in any country, did not amount, in the number of kinds, to one hundredth part of what are now common to the gardens, not only of Britain, but of the temperate regions of the globe in both hemispheres. The distribution of this small number of plants, by gardeners, was formerly as simple as their number was few. All the woods of a place were formed of two or three kinds of trees, planted in rows or in masses, in the geometrical style, which we need not here describe; and the flowers were placed in a compartment near the

house, walled or hedged round. The lesson, therefore, to be learned from the geometrical style is abundantly easy.

269. *Trees.*—In every country, the plants which are indigenous, and found there when it is rescued from an uncultivated state, form but a very small number of those which will grow in it. Hence, with the progress of civilisation, an immense accesion has been made, both to the useful and ornamental plants of every country. This, in Britain, has taken place more especially within the last three centuries; and the mode in which the newly-introduced plants have been distributed by landscape-gardeners, since the introduction of the modern style of art about the beginning of the eighteenth century, is as follows:—The different kinds of trees are distributed over the parks in scattered groups or clumps, as single trees, or in a belt or strip forming its boundary. The order in which the kinds are placed with reference to one another, is considered of little importance; but, till lately, it has generally been attempted to mix the foreign and the indigenous sorts indiscriminately together throughout every part of the park. In more conspicuous or favourable situations, such as near the house, or along the approach road, some of the more choice trees were planted singly, and protected with more care than the others. The single trees and scattered groups, or clumps, were all guarded from the cattle by fences; and the boundary belt, commonly by a wall or close paling on the outside, and a hedge and ditch within. The ground was commonly dug or trenched before planting; and sometimes it was dug in the clumps and belts for two or three years afterwards. After this, the trees were left to themselves; thinning and pruning being more or less attended to in some cases, and altogether neglected in others. In consequence of the mixture of indigenous and foreign trees, and their after neglect, the indigenous and more vigorous-growing trees choked up, weakened, and ultimately destroyed the foreign kinds; so that, when the timber in such plantations arrived at an age to be cut down, there was seldom much which was good for anything that was not produced by the native trees of the country. To counteract the ill effects of this indiscriminate mode of planting, it is best to adopt some regular system of arranging trees in groups; so that those of the same kind should stand together, and yet a diversity of effect be produced. Mr. Glendinning has proposed a manner of doing this, which he described in the *Gardener's Magazine*, vol. xi., and which is shown in the diagrams *figs.* 82. to 85. In *fig.* 82., *a* is the English oak; *b*, the Turkey; *c*, the Lucombe; and *d*, the scarlet; and in *fig.* 83., *e* is the Fulham oak; *f*, the Ilex or evergreen oak; *g*, the variegated English; and *h*, the cork tree. In this manner two clumps are formed of oak trees, so arranged as to produce a great variety of foliage, and yet to prevent the stronger kinds from destroying the weaker ones. In the same manner pines and firs may be planted, as shown in *figs.* 84. and 85., in which "*i i* may be the Scotch pine; *k*, the larch; *l*, the spruce fir; *m*, the stone pine; *n*, the pinaster; *o*, the silver fir; *p*, the Weymouth pine; and *q*, the Balm of Gilead fir. Where houses are built in the midst of romantic scenery," Mr. Glendinning continues, "by the sides of rivers or ravines, or on rocky eminences, the opposite and surrounding scenery may sometimes be much improved, without absolutely destroying its wild character, by the introduction and grouping of foreign as well as native plants. Thus, in *fig.* 86., oaks may be planted at *r*, pines or firs at *s*, and the beech at *t*; while for low growths there may be hazel at *u*,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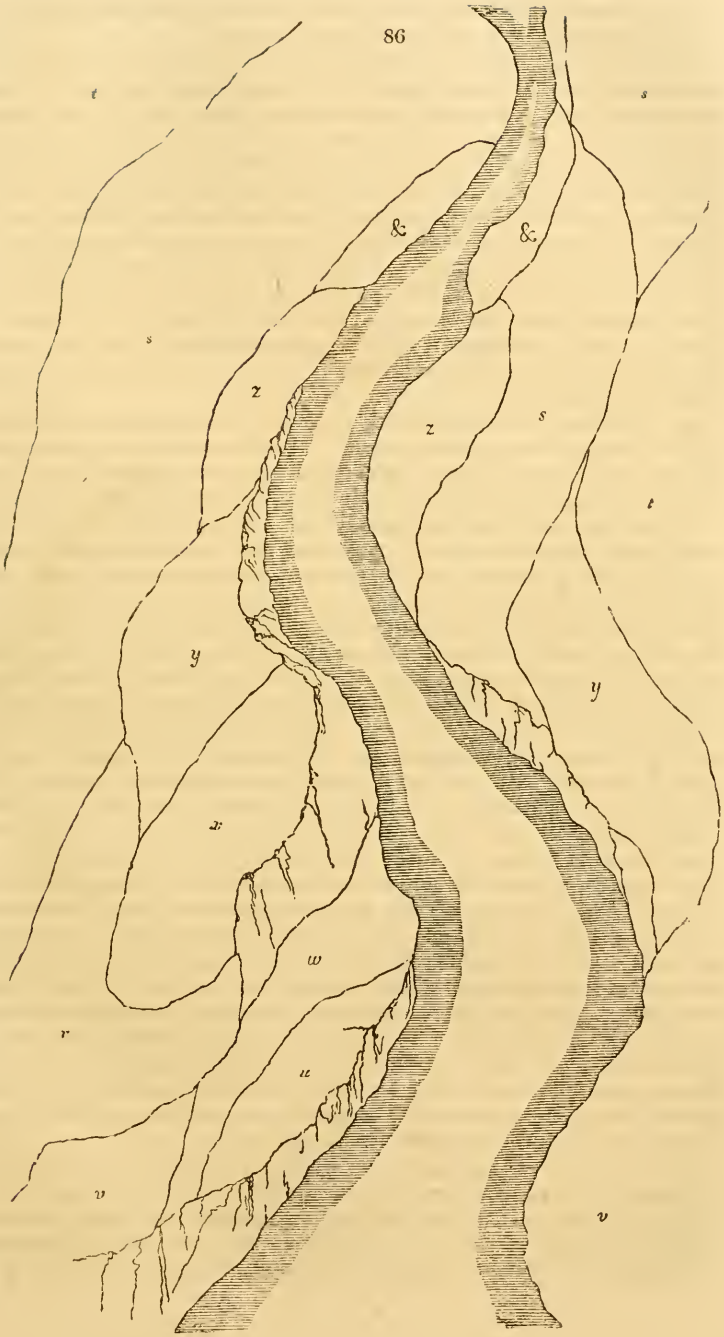
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yellow broom at *v*, sloe thorns at *w*, scarlet thorns at *x*, rhododendrons at *y*, white broom at *z*, and the double-flowered furze at *&*."

270. *The shrubs*, since the modern style of gardening has commenced, have been planted in the pleasure-ground, in the same general style as the trees were in the park; that is to say, they have been placed singly, or in groups or clumps, over a lawn two or three acres or more in extent; and around it, or along one or more of its sides, in strips, which were called shrubberies. Here, as in the case of the trees, the indigenous and foreign shrubs were mixed up together in every part of the clumps and shrubbery; and the result, thirteen or fourteen years after planting, was similar to that which took place in the plantations in the park; viz. the more delicate and foreign plants were choked up and destroyed by the vigorous-growing trees; and old pleasure grounds, which had, perhaps, been originally planted with above a hundred kinds of shrubs, fifty years afterwards displayed only huge overgrown bushes, or low trees, consisting of not more than twenty or thirty indigenous species.

271. *The flowers* were distributed in the front of the shrubbery, and in front of the clumps in the pleasure-ground. Like the shrubs, they consisted of foreign and indigenous kinds indiscriminately mixed together; and, like them, the former were destroyed by the latter and by the shrubs. It is only lately that beds wholly planted with flowers have been introduced on lawns; and, though what are called flower-gardens (that is, assemblages of beds wholly devoted to flowers) were to be met with in first-rate places during the latter half of the eighteenth century, yet, during that period, the principal places where they were planted were in the shrubbery or in the borders of the kitchen-garden. With the commencement of the present century, the practice of forming flower-gardens has increased; and, within the last twenty years, that of forming beds exclusively devoted to flowers on grass lawns, either in groups among the scattered shrubs, or by themselves, here and there along the walks, has become general. The flowers planted in these flower-gardens and beds were, till lately, mixed together indiscriminately in the same manner as in planting the shrubs in the shrubbery, or the trees in the clumps and belts; and, wherever the plants were not taken up and replanted every two or three years, the same results took place, of the stronger destroying the weaker. A great improvement has been made in the planting of flower-beds within the last twenty or thirty years. This consists in planting each bed with only one kind of flower, by which means a brilliant display of colour is produced; and in selecting for the flowers to be so planted those from warm climates, such as pelargoniums and fuchsias from the Cape of Good Hope and South America, &c., by which means a more brilliant display of colour is produced; the plants of warm countries far excelling, in this respect, those of colder climates. Such, in a few words, has been the practice of planters, landscape-gardeners, and flower-gardeners, in British gardens, up to the present time. We shall now briefly inquire into the mode in which trees, shrubs, and flowers are distributed by nature.

272. *In the natural scenery of every country*, a certain number of plants will always be found congregated together, to which the soil and local situation are favourable. The number of species in these assemblages depends partly on the suitableness of the soil and climate for a great variety of species, and partly on the number of species naturally inhabiting that locality. In

general, the greater number of species are found in alpine countries, on the sheltered sides of hills, where the soil is exceedingly various, and also the temperature, in consequence of the surface of the soil being exposed to the sun's rays at very different angles; as well as from other causes. The smallest number will generally be found in plains where the soil is wholly alluvial, and, perhaps, occasionally overflowed by a river; or in wastes, where the soil is a drifting sand. Even in the most favourable situations for a considerable number of species, that number, in a state of nature, and without the care of man, can never be great; because the stronger species, whether these acquire their strength from their nature, or from being placed in more favourable circumstances than other individuals of the same species, will soon weaken or destroy the others. Hence it is, that, in a natural forest, the number of kinds of trees, shrubs, and other plants, present in any one place, is comparatively few. These few will generally be found to consist of a prevailing species of tree, with perhaps one, two, or three, in a hundred, of some other kind of tree; a prevailing kind of shrub, with some subordinate undergrowths; and as generally, a prevailing kind of flowering herbaceous plant, fern, grass, moss, or even fungus or lichen. It is to be remarked of this mode in which Nature distributes her plants, that it is much more simple, and at the same time better calculated to be productive of variety, than the mode which we have described as being adopted by gardeners. In consequence of one kind of tree, shrub, plant, &c., always prevailing in one place, the aspect and interest of that place must necessarily be different from another where the species which prevail are different. In traversing a natural forest, with a view to studying the different kinds of trees and shrubs produced in different localities within it, we shall find the following causes are principally in operation:— 1. Difference in the nature of the soil and the subsoil or rocks. 2. Difference in the capacity of the soil for retaining water. 3. Inclination of the surface, by which the water or rains is more or less thrown off. 4. The aspect of the surface, from which it is more or less heated, according to the direct or indirect influence on it of the sun. 5. The elevation of the surface above the level of the sea. Hence, the greatest variety of trees, shrubs, and flowers, in any one country, will be found around the base and on the sides of its highest mountains.

273. *Improved mode of planting the pleasure grounds of country villas.*— Having seen the mode of distributing trees and plants adopted by the majority of gardeners, in the present and in former times, and their natural distribution in this country, and in every other, it may now be asked what mode we recommend to be adopted. To which we answer, briefly, an improvement on the present system, with some innovations, for which a sufficient reason will be given. Improvements in gardening, as in every other art, can only be effected by degrees; and it rarely happens that any individual can do more than make a slight advance before his contemporaries. The principles on which we propose to distribute trees, shrubs, and flowers, in parks and pleasure-grounds, are the following:—

I. *Trees and Shrubs. — Choice of Kinds.*

1. We would introduce generally in every place, whether large or small, as many different species and varieties as would thrive in it; in small places, having no more than a single plant of each species or variety; but, in larger ones, introducing duplicates, triplicates, or a greater number, according to the extent of the place, but keeping each kind by itself.

2. Where the object was ornament, novelty, or variety, we would generally prefer kinds foreign to the country, or, at all events, to the locality; but, where the object was chiefly timber, shelter from high winds, coppice-wood, hedges, &c., we would prefer indigenous species.

3. In places so small as not to admit of even one plant of each species and variety, we would give the preference to foreign kinds, and would generally exclude such as are indigenous, except greatly improved varieties.

4. In general, even where the space would allow of the introduction of the indigenous species, we would only plant them in small quantities, and chiefly for the purpose of rendering the collection of sorts complete, or for harmonising the woods of a residence among themselves, or with those of the adjoining residences, or for preserving artistical effect; unless, indeed, the object were timber, or other useful products, in which case we would plant these to the exclusion of the others, agreeably to Rule 2.

5. We would give the preference to such kinds as were likely to thrive best in the given soil and situation.

Trees and Shrubs. — Distribution.

6. We would adopt various modes of distribution, according to the object in view, either in the entire place, or in different parts of it.

7. In the park scenery, and in larger plantations, trees should prevail, and in the pleasure-grounds, and in the lawn near the house, shrubs: because the former are more grand, and the latter more beautiful; and because those in the park require to resist horses, cattle, &c., while all domestic quadrupeds are excluded from the pleasure-grounds.

8. Near the house, or in what may be considered the more select parts of the grounds, we would make choice of the more rare and beautiful species or varieties, without reference to the countries where they are indigenous.

9. Near the house and offices, the prevailing kinds should be evergreens; and these should be introduced, to a greater or less extent, in almost all the plantations of the place.

10. Marshy situations are those where evergreens are least natural; because there are few kinds that grow in marshes. On the other hand, most evergreens either grow naturally, or will thrive in sand. Hence, in artificial scenery, the presence of evergreens always implies a dry soil and healthy situation.

11. In general, a plantation where the trees are deciduous, should have a portion of the shrubs introduced among them evergreens; and, on the contrary, where the trees are chiefly evergreens, a considerable portion of the undergrowth ought to be deciduous.

12. Throughout the greater part of the grounds, where any distribution might be adopted at pleasure, we would place such together as require the same soil and situation, or are generally found growing in the same locality in their native country, or are obviously allied by nature. This would bring together, in some places, trees and shrubs requiring moist soils, such as the willow, poplar, alder, &c.; in others, such as required peat or bog, or as thrive best in these soils, as is the case with all the *Ericaceæ*, and with most of the American trees and shrubs: it would also bring together such natural families as the *Quércinæ*, the oaks all requiring good soil; and the *Coníferæ*, as all requiring a soil comparatively dry and sandy.

13. While we arranged the general masses of the trees and shrubs of a place, so as to produce broad distinctive features, we would introduce certain species throughout the greater part of the plantations (though only sparingly), for the sake of harmonising the scenery of the particular residence with the scenery of the residences or of the country lying round it. The harmonising plants, in both cases, will be most effective when they are evergreens; but there ought, also, to be some of deciduous kinds, in order to admit of uniting an evergreen mass with an adjoining deciduous one.

14. As the species for harmonising the plantations of a residence within itself should not be of large size, and should be such as are acknowledged to be beautiful, and also known to general observers, in order that the harmony may be felt by all, the holly, the box, the laurustinus, and the American thorns are very suitable for this purpose.

15. To harmonise the plantations of a residence with those of the residences around it, the more conspicuous kinds of trees in the latter require to be introduced (though only

sparingly) in the former. Thus, if in one part of the plantations of the adjoining residences, near the boundary fence, pines should prevail; then, two or three, or more, of the same sort of pines should be introduced within the boundary of the central residence; and farther in the interior there may also be one or two of this species of pine. The same remarks will apply in the case of exterior plantations of oak or other trees, or of coppice-wood; but much of the good effect of carrying this idea into execution will depend on the taste and judgment of the planter.

16. In general, we would adopt the gardenesque manner of planting trees and shrubs, especially in the pleasure-ground, and near the house; but, in more distant parts of the ground, we might adopt the picturesque mode, for the sake of variety and of saving labour; and this mode might also become necessary, in some cases, for harmonising the scenery within with the external scenery.

17. On no account whatever would we introduce nurse plants, as they are called, or common sorts, for the sake of covering the surface, in a plantation where ornament was the principal object in view. Such nurse plants, and common kinds put in to fill up, exhaust the soil by their roots; and, by the shade and shelter afforded by their tops, draw up the plants to be nursed in such a slender, sickly state, that, when the nurses are removed, the principal plants that remain are weak and unsightly; whereas, had they grown up without the nurses, they would have been bushy and handsome on every side. After all that has been experienced and written in favour of introducing nurse plants in plantations, we are very much inclined to question whether anything is gained by it in the end. It must be recollected, that, at the time when nurses were most strongly recommended by planters, the importance of exposing as large a surface as possible of the foliage of every plant to the sun and air was not understood; and the circumstance that the nurses, from being the stronger plants, must necessarily draw the greater proportion of the nourishment from the soil, and in that respect retard the progress of the plants to be nursed, seems to have been overlooked. It is not denied that nurses will draw up young plants: but it is a question whether a plantation, say of oaks, for example, drawn up according to the best practice by nurses, and another plantation of oaks alone, not drawn up either by nurses or by one another, would not arrive at the same height in sixty or eighty years after planting; and, if so, there can be no doubt that the latter would be of greater bulk.

18. The gardenesque manner of planting and managing includes the application of pruning and thinning, at all future periods of the growth of the trees and shrubs, so as to keep each plant perfectly distinct from those around it. The picturesque manner of planting also employs thinning and pruning; but the object of these, in this style of gardening, is less definite; being for the purpose of throwing the plantation into groups, or to increase the growth of underwood at some places, or of tall trees at others; and for similar objects connected with the production of picturesque beauty and shelter, shade, or timber.

19. The proportion of surface, in a park or pleasure-ground, which we would cover with wood, will depend on the degree of variation in that surface. In flat grounds, a very small quantity of trees and shrubs is required in proportion to the extent of turf; and the contrary is the case in very irregular surfaces.

II. *Flowers. — Choice of Kinds.*

1. As the kinds of flowers are exceedingly numerous, unless there were a decided taste or desire for botanical knowledge, we would introduce only the more showy and vigorous-growing sorts, increasing the number of kinds according to the size of the place.

2. Where it is intended to form a collection, every kind may be procured that will grow in the given climate.

3. We would select some of each of the different colours, so as to have an equal number of these colours in bloom for each of the floral months. We would also select these from as many of the natural orders as practicable, in order to show greater variety in the forms, and in the botanical differences of the flowers.

Flowers. — Distribution.

4. We would seldom plant flowers among trees, and large-growing shrubs; but either in beds or groups by themselves, or with an admixture of low-growing flowering shrubs; such as roses, hydrangeas, helianthemums, &c.

5. Almost the only kinds of flowers that we would introduce among large-growing shrubs are spring flowering bulbs.

6. In distributing beds of flowers over a residence, we would limit their range to a portion of the pleasure-ground adjoining the house; and we would place them along the walks, in order that they might be near the eye of the spectator.

7. Besides these scattered beds, we would form, in each place, one or more flower gardens.

8. In distributing the kinds in the beds, we would aim sometimes at producing splendid masses of one colour; and, at others, of variegated masses of colours; sometimes we would have in view a fine display for only one month, to be succeeded by some other flower for the following month; while in other cases we would plant such a selection as should exhibit an equal number of plants in flower every month throughout the season.

9. Flowers requiring particular soils, aspects, &c., we would plant together in the same group or bed.

10. Flowers characteristic of particular countries we would frequently plant together; such as Swiss plants, Highland plants, American plants, or the characteristic flowers of the flora of any particular country.

11. For the sake of a more brilliant display, we would introduce, in groups by themselves, beds of exotic flowers, or flowering shrubs, requiring to be brought forward under glass, &c.; such as pelargoniums, fuchsias, salvias, celsias, &c.

12. Where there is a taste for botany, and a desire to possess an extensive collection of hardy herbaceous plants, we would contrive to introduce as many species as might be thought desirable in a botanic flower-garden, arranged either geographically, that is, each country by itself; physically, that is, according to soil, aspect, &c., such as alpines, meadow plants, marsh plants, or aquatics; or systematically, that is, according to some system of botanical classification.

13. When the object of a bed of flowers is to present one unbroken mass of colour, we would plant and manage it in the picturesque manner; but, where the object is to exhibit each plant separately and distinctly, then we would plant and manage the flower-beds according to the gardenesque mode.

14. We would take up, and replant in fresh soil, all perennial flowers whatever, at the end of one, two, or three, or at most four, years; in order to prevent the stronger from overpowering the weaker, and the soil of the bed from becoming exhausted by the abstraction of nourishment.

15. Where the picturesque plan of planting the trees and shrubs is adopted, perennial flowers and bulbs may be planted among them, on the first formation of the plantation, and left to be choked up and destroyed as the woody plants gradually spread over the surface.

16. The proportion of space, in the pleasure-ground, which should be covered with flowers, will depend on the taste of the proprietor. If shrubs and breadth of lawn are preferred, or if there is a separate flower-garden, then the flower-beds need not be numerous, and may consist of a few near the house; but if the taste for flowers is greater than that for trees and shrubs, then the flower-beds may be increased accordingly.

274. *Architectural ornaments.*—The number of these about a place depends on various circumstances, but chiefly on whether the pleasure-ground is plain, or much decorated in the immediate vicinity of the mansion. If there be a terrace-walk bordering the house, and leading to the flower-garden, the former may be enriched with statues, and the latter with vases, agreeably to principles already laid down in the preceding pages of this work. The walks in the pleasure-ground should, at all events, have seats placed in situations displaying the best views; which may be of the most simple description, and formed of the most common materials, as shown in *fig.* 82.; or there may be covered seats, in the form of different descriptions of rustic buildings, constructed chiefly

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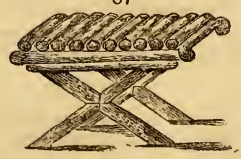
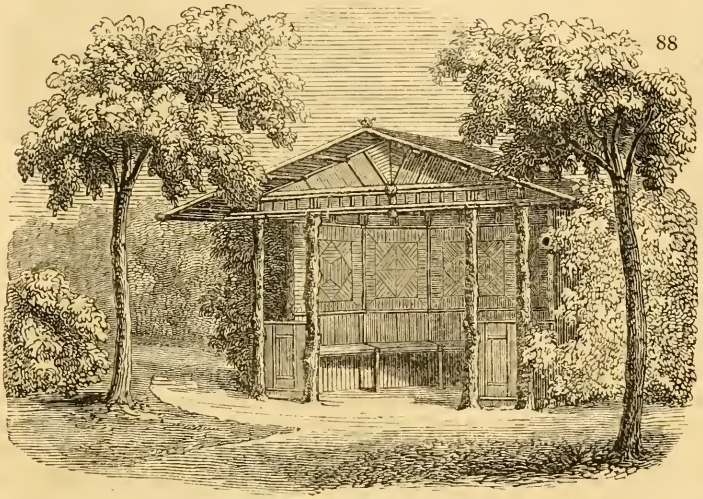


of wood, introduced where they would be useful as places for resting, and desirable as objects in the landscape. (See *fig.* 88.) In general, garden



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buildings of a purely ornamental description, should either be very few (in which case they may be built of substantial materials, such as brick or stone); or, if of frequent occurrence, the materials of which they are constructed should be temporary, interest and value being given to each by its design. Expensive garden buildings, such as classical temples, porticoes, colonnades, &c., containing statues, busts, and sculptures of marble, can seldom be indulged in in small places, and, indeed, are better adapted for the grounds of hereditary residences. In residences liable to be sold on the death of the proprietor, ornamental buildings, whether of the permanent or temporary kind, add little or nothing to the price of the estate; and had Stowe, where the garden buildings are magnificent, been sold at the death of the Earl Temple, during whose occupation of that estate they were built, they would have brought little more than the root-houses at the Leasowes, a contemporary ornamental residence, did on the death of their architect and proprietor, Shenstone. Ornamental buildings, therefore, are chiefly to be valued for the enjoyment they afford the proprietor during his lifetime; and, unless a part of this enjoyment consists in knowing that these buildings will descend to his posterity, prudence dictates that they should be built so as not to occasion great expense. In all that respects the introduction of ornamental buildings, however, much must be left to the particular taste of the proprietor; and, as most proprietors take pleasure in having at all times some structure, alteration, or addition, going forward, this is an additional argument in favour of structures of temporary materials, erected for picturesque effect, and as occasional resting-places; or for affording shelter, and not intended to last longer than the verdant scenery by which they are surrounded; or, in other words, to be equally subject to change as the rest of the garden.

275. *Rustic vases* (as shown in *fig.* 89.), *baskets of rustic work*, boxes or

beds of flowers cased with fantastic roots, hollow stumps of trees, rustic arcades, dead trees, and other places for forming receptacles for low plants, or supports for climbing ones, may all be introduced occasionally; care being taken that they are never displayed in such numbers, or of such magnitude, as to attract more attention than the flowers to which they are meant to be subservient. To keep within the happy medium, however, in this kind of garden ornament, is extremely difficult; since the proprietor, who has had them constructed under his direction one after another, is apt to lose sight of the general effect, in the interest which each separate object has created in his mind, and which he looks upon with the fond indulgence of a parent; forgetting that a stranger judges of them solely by their effects as connected with the scenery around them.

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276. *Wirework*, in the form of the rims and handles of baskets, edgings, and various kinds of props for climbers, may also be occasionally introduced; always, however, remembering that they are to be subordinate objects to the plants which they enclose, protect, or sustain. It is customary to paint wirework of this description green; but, in our opinion, this colour is the very worst that can be adopted for any kind of structure or utensil to be placed among the green of nature. A stone-colour, or dull white, or greyish black, we think greatly preferable. *Fig.* 90. shows a mode of forming edgings to beds in gardens. *Fig.* 91. shows a wirework edging of a handsome kind, and on a larger scale.

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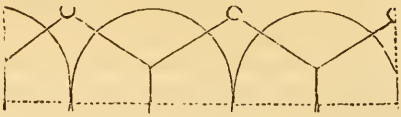

277. *The use of vases, and other garden ornaments of artificial stone, or of earthenware*, is now very fashionable in pleasure-grounds, and more especially in flower-gardens; but this kind of ornament is very frequently overdone or misplaced. When they are used, they should, if possible, be placed on a pedestal corresponding to the vase, as shown in *fig.* 92.

278. *Sculpture in gardens.*—Whoever understands the phrase "unity of expression," and can examine any scene presented to him by the test of its being or not being, "a harmonious whole," will be able to determine what is right and what is wrong in the disposition of sculptural ornaments in gardens. All architectural objects and statuary, being ponderous and intended for great duration, should be placed on bases obviously secure and durable. A vase or a statue should never be set down on grass, or on dug ground, without a decided pedestal, resting, or appearing to rest, on a secure foundation; and it should never be set on anything less obviously durable than masonry. Where such objects form the predominating features in a scene, they should always be connected with some kind of building, such as a parapet or terrace-wall, or even a stone border to a walk, a bed, or a pond; and, in default of these, even a paved walk between a row of statues, the pedestals standing on a flagstone, projected from the pavement into the adjoining

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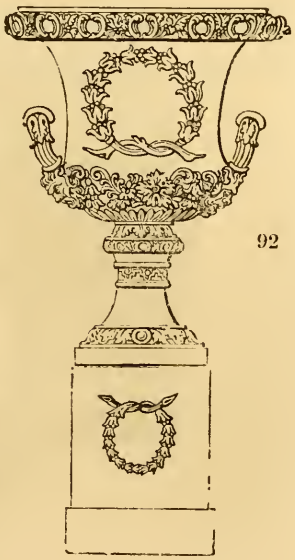
turf or dug ground (see *fig.* 93.), will tend to preserve unity of expression. Even an area of gravel projected from a gravel walk, and extending an inch or two all round the pedestal, will have a tendency to maintain the secure architectural character which ought always to accompany architectural and sculptural objects. Rootwork, rustic baskets, and other temporary objects or structures of this kind, should seldom or never be introduced in the same scene with vases, statues, or other ornaments of worked stone. A striking example of the bad effect of mixing styles may be seen in *fig.* 94., in which a rustic summer-house, a classical vase, and a Chinese seat are all placed together.



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279. *Rockwork*, or a collection of fragments of rock, stones, flints, vitrified bricks, scoriæ, and similar objects, to serve as a nidus for plants, is allowable in particular

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situations; but no description of garden ornament, unless, perhaps, we except rustic work of the kind mentioned in the preceding paragraph, is more frequently misplaced and mismanaged. Collections of stones should never be heaped up about the roots of trees, at the base of walls, or against a mansion, hot-houses, &c.; nor should accumulations of fragments of stone ever be piled up on a level surface of turf, without some preparation or accompaniment indicating that they might have been there naturally. Two of the most remarkable pieces of rockwork in England, are that at the Hoole, near Chester, constructed from the designs, and under the immediate inspection, of Lady Broughton, and that at Elvaston Castle, the seat of the Earl of Harrington. There is also a rock garden at Blenheim, one at Chatsworth on a most magnificent scale, one at Redleaf, and one in front of the magnificent botanical conservatory at Syon. The rockwork at Redleaf, near Tunbridge (of which views will be given in an after part of this work), is an excellent example of the best mode of improving a country naturally rocky. At the Hoole (a series of views of which will also be given in a subsequent part of this work), there is a direct imitation of the glaciers of Switzerland, with a level valley between; and on this valley the mountain scenery projects and retires, forming a great variety of prominences, recesses, and sinuosities, aided by scattered fragments of rock, of different dimensions, and by shrubs and herbaceous plants. At Syon, no particular description of rocky scenery is imitated, and the scene can only be described as a ridge formed by piling up huge masses of stone, of different kinds; but the base of this ridge is so well united with the turf, and the whole of the ridge is so disguised by trees, shrubs, and plants, that the want of natural character scarcely ever occurs to the mind. Where the base of the ridge joins the level ground, there are at first seen here and there some slight protuberances of turf, each of which seems to indicate that there is a stone below, and quite near the surface. A little farther apart, portions of the stones seem to have burst through some of the protuberances; and here and there the upper parts of some stones appear quite bare. Near these, are blocks of stones raised in great part above the surface, and occasionally some entirely so; and, farther on, the grouping becomes conspicuous, and two or three stones are seen piled on one another. To groups of different sizes, so formed, is joined the great ridge, rising to the height of upwards of 50 ft.; and, on climbing up its sides, they are found to be varied by natural-looking paths among the stones, and a profusion of curious little rock plants, unseen from below. At Elvaston Castle, the rockwork is placed on the banks of a long winding lake, and is constructed on a most magnificent scale. The masses of rock appear scattered in a natural manner through the valley, sometimes rising into steep precipices intersected by winding walks, which lead the visitor easily, and almost imperceptibly, to the summit. At Blenheim the object is to ornament rocky scars on the face of a steep bank, and consequently there is no difficulty in forming ledges and niches for the plants, as there is abundance of stone of the same kind as the bank in the vicinity. There is nothing particular in the disposition of the stones; but the stairs which pass obliquely through the scars, and cement them together, are very well managed. Each part has a separate nidus, with appropriate soil; and the stones are covered with mosses and lichens, which, by the richness of their colouring, produce a very striking effect.

280. *Position of rockwork.* Rockwork or stones, so disposed as to convey

the idea that they form a part of, or protrude from below, the foundation of a building, produce the expression of stability and propriety; but, when they are heaped up on the surface of the ground against the walls, the idea of incongruity is excited, by seeing that which ought to be the foundation, and consequently under the building, piled up against it, and above the surface of the ground. Not only are the ideas of propriety and stability thus totally destroyed, but those of disorder and insecurity are produced. Neither, as we have observed in a preceding page, should roots, decayed trunks, stumps, or branches of trees, ever be mixed up with stones, on account of their obvious incongruity in point of durability. Each of these kinds of materials ought to be kept by itself; and thus we might have receptacles for plants formed entirely of decayed wood in one place; in another, of fragments of rock; in a third, of land-stones or of flints; and, in others, of vitrified bricks, of scoriæ, of pieces of hewn stone, of fragments of sculpture, of shells, of corals, of spars, of petrifactions, &c. When there is nothing in the nature of the surface that indicates the presence of rock or stone in the soil, and when it is determined, at all events, to have some rockwork, one of the three following modes may be adopted to render it natural: viz., the rockwork may be built on a level surface; an excavation may be made to imitate an old stone quarry; or a walk may be carried through rocks.

281. *On a level surface*, a preparation may be made, beginning at a short distance from where the main body of rockwork is to be placed, by sinking some fragments of stone into the earth, so deep as to show only their edges, or angles, rising above the turf. As the main body is approached, these stones may become more numerous; larger portions of them may be shown; and they may be connected in lines, or ridges, in such a manner as to indicate, partly by protruding stones, and partly by raised places in the turf, something like the "cropping out," or rising to the surface of natural strata. A few half-sunk stones, of different sizes, may then appear in groups, as if they had been accidentally separated from these strata; and immediately before the mass of rockwork, there may be some loose stones, with flat sides, piled irregularly on one another, so as to form subordinate masses to the large mass. This large or principal mass must be in imitation of some natural character of rock; and, whatever that character may be, the manner of the preparation for it which we have been just describing must be of the same kind. The rock to be imitated may be stratified in various ways, as we see sandstone, limestone, slatestone, &c., in nature; or it may be in masses, with no appearance of regular strata, but with cracks and fissures, sometimes horizontal or oblique, and at other times perpendicular; and differing both in the magnitude of the clefts or fissures, and also in their numbers, as we often see in masses of granite, trapstone, &c. In short, having thrown out the idea of imitating nature, both in the main mass of rockwork, and in the preparations for it, that alone will be sufficient to guide the artistical gardener, who has lived in a hilly or rocky country. It will be seen, from these remarks, that the kind of rockwork which displays a heap or heaps of stones, however large some of these may be, all showing themselves above the surface, and to the same extent over the whole heap, as if it had been merely a mound of earth dotted over with stones, has no claim whatever to be considered as rockwork in our sense of the word. It may represent a commonplace or a curious heap of stones, which may be more or less convenient for the culture of plants;

but it is altogether unfit to be introduced into garden scenery, as an artistical object. In general, rockwork, to be truly natural, can only show the rock on one side, or, at most, on two sides; as scars, cliffs, precipices, &c., are seen in rocky districts. The upper part of the rock should be covered with turf, and trees, and bushes, and the inclination of the turf should follow the supposed continuation of the rocky strata. This mode is not only natural, but has the advantage of being convenient; because, by making the angle of elevation of the strata more or less, according to the extent of the ground, the covering of turf can, at a greater or less distance, be made to unite with the level turf of the lawn. Where ferns, or plants requiring shade, are chiefly to be cultivated as rock plants, the abrupt side or face of the strata may face the north, and the talus, or sloping side, the south. Where early-flowering plants are to be cultivated, such as the Californian annuals, the abrupt side may face the south or south-east. It is almost needless to state that on the sloping side, which may be called the back part of the rock or hill, there ought to be no rocks or stones cropping out; but, on the contrary, the appearance ought to be such as to indicate depth of soil, where the slope joins the level surface; that being always the case in nature at the base of a declivity. The covering of the rock, or hill, including the slope, and also a portion of the adjoining lawn, may be planted with trees and shrubs, chiefly in the picturesque manner; as their appearance in such a situation, and disposed in such a manner, is perfectly natural, powerfully supports the idea of the truth of the imitation, and serves artistically to unite the hill with the level surface. To render the imitation of the abrupt side, or face, of the stratified rock artistical, all that is necessary is, to let the flowering plants introduced in the clefts, fissures, or shelves (produced by one stratum projecting farther out than another), be of foreign kinds. Where granite or basalt is the material used, the stratification, or lines of separation, may be chiefly vertical; but, in the case of sandstone or limestone, they should be chiefly horizontal. The most intractable materials for forming rockwork which is intended to have any grandeur of effect are, land stones, pebbles from the sea shore, flints, and chalk-stones; which, indeed, are only fit for facing an abrupt irregular bank, to be planted with creepers or alpines. *Fig.* 95. may be described as a mechanical representation of a piece of

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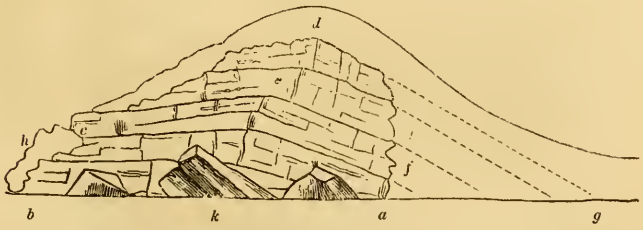
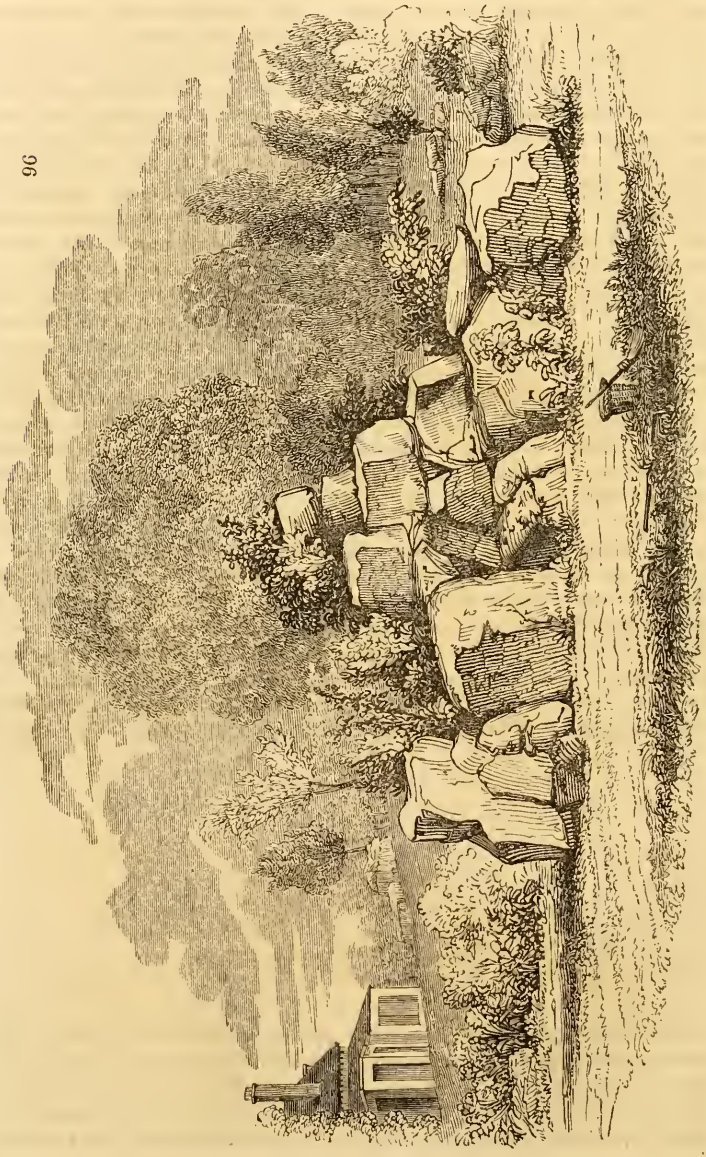


artificial rockwork, in the form of a scar, or precipice, rising from a flat surface, and consisting of the cropping out of strata that have a considerable dip, or inclination. In this figure, *a b c d* show the face of the rock on two sides, in which the lines of the strata, viewed in front, appear nearly horizontal, in different beds; each bed projecting somewhat beyond the one which

is over it, in order to form ledges (*e*) for plants. The dotted lines *f f* show the supposed continuation and dip of the strata under the turf. The space *d i g* is covered with earth and turf, as is the rock on the opposite side at *h ; i* shows the talus at the back of the scar or cliff, where the soil is always



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deepest and best; and *k*, preparatory fragments in the foreground. It will be recollected that this sketch is made purposely plain and formal, for the sake of illustration; but *fig.* 96., a view of part of the rockwork at Redleaf, may be referred to, as combining illustration with effect.

282. *An excavation may be made in a flat surface*, and in the bottom of it water may be introduced; from one or more of the sides of this small pond,

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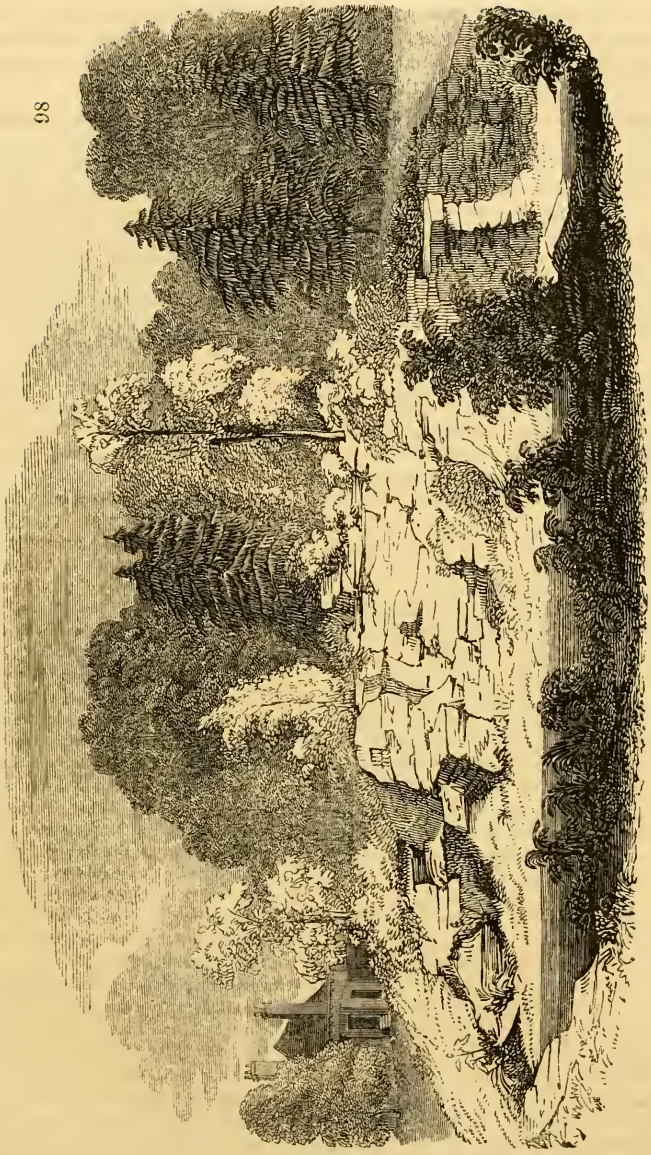
stratified rockwork may be carried up to the surface, and considerably above it, so as to give some distant resemblance to an old stone quarry, which may be supposed to have existed there before the spot was turned into pleasure-grounds. An example of rockwork of this kind is given in *fig.* 97., and it is an idea which every gardener of taste will know how to improve and carry into execution.

283. *A walk, or a glade of turf*, may be sunk in a level surface, or carried through a knoll or raised surface; and the sides of the glade or walk may display scars or precipices of rockwork, more or less stratified, according to circumstances. On the surface above such rockwork trees may be planted, which would give the whole an air of truth, stability, and durability; the very reverse of the effect produced by heaping up fragments of stone about the roots of trees. An example of this is shown in *fig.* 98. In general no rockwork of any kind whatever can be put together in a manner satisfactory to the man of taste, except by a workman who has the eye of an artist, who can conceive beforehand the effect which he wishes to produce, who has some idea of connexion and grouping, and who knows the difference between peculiar and general nature. Those who attempt rockwork, without possessing one or more of these qualities of mind, can hardly fail to be unsuccessful; or, if they produce anything good, it must be by mere accident. They may put together heaps of stones, larger or smaller, according to the abundance of the material, or the sum expended; the heaps may be curious, from the variety of stones, spars, &c., brought together; or ludicrous, from the fantastic shapes of some of them; or childish, from the position of others; but nothing to affect the imagination can ever be the result of such accumulations. After all that has been done, they will still be only heaps of stones. Hence it is, that all the rockworks in Britain, worth looking at, have been constructed by workmen who have had a natural genius for this kind of work; or under the immediate direction of artists. For example, those at Pain's Hill, Wimbledon House, and Oatlands, were put up by a stonemason, who devoted himself entirely to this kind of production, and who was eagerly sought for in every part of the country; that at Hoole, as we have seen, was designed and executed under the eye of the proprietor, Lady Broughton; that at Redleaf was also executed under the direction of the late Mr. Wells himself; and the interesting grottoes and cascades at Wardour Castle, by a mason who was much employed in that way throughout the country, and who, though he received nearly a pound a day, when employed, died some years ago, as we were informed in 1833, in the parish workhouse.

284. *Water.*—To determine the extent to which water should be introduced, and the character which it ought to assume in small places, is a point requiring some consideration. In the case of a spring or a running stream the difficulty is not great; but, where there is only just a sufficient supply of water to maintain a pond or small lake during the summer season, the skill required is greater. The difficulty arises, not from any doubt of the effect of the water, in a picturesque point of view, for that is easily determined; but with regard to its influence on the salubrity of the atmosphere of the place. The exhalations, even from pure water, when they are taken up by the atmosphere of any given space to such an extent as to render it moister than that of the surrounding country, must be considered injurious; and much more so are exhalations from water rendered impure by the decay of vegetables



along its banks, or by the admixture of impurities from the drains of offices, &c. Attentive observation, and some experience on this subject, have enabled us to arrive at the following conclusions, which may be considered as principles:—Water should never be introduced in landscape gardening, unless it conduces to health, beauty, or picturesque effect.

285. *With a view to health, water ought never to be introduced* where it will increase, in any sensible degree, the quantity of moisture that would otherwise be taken up by the atmosphere of the locality, either in summer or winter. From this principle the following rules may be deduced:

1. That the surface to be covered with an artificial piece of water should be small, in proportion as the general surface of the ground is flat; the soil retentive; the park, pleasure-ground, or enclosure, small; and the trees and shrubs numerous.

2. That the most wholesome situations in which artificial water can be introduced, are those where the general surface of the ground is elevated, and the soil naturally dry, and not thickly covered with trees and shrubs.

3. That, in flat situations with retentive soils, where the surface is thickly planted with trees or shrubs, water, even on the most limited scale, should never be introduced, without, at the same time, rendering the surface of the surrounding ground perfectly dry by the frequent drain system.

4. That in no description of artificial water ought the decay of vegetables to be allowed to take place, and more especially along the margin.

5. That the margin of all artificial pieces of water ought to be formed of a considerable thickness of gravel or small stones, or of blocks of stone, in imitation of rockwork; in order to diminish the quantity of spongy or marshy matter, by which evaporation never ceases; and substitute for it a smooth hard surface, from which evaporation will go on with rapidity, and which will thus soon become quite dry.

Gardeners are in the habit, when they plant out pelargoniums, and other spongy-wooded green-house plants, on lawns, to reduce them before planting out to single stems, and to free these from leaves to the height of 3 or 4 inches. After planting, the surface (which forms a very gentle knoll, about 1 ft. in diameter, and, say, from 1 in. to 2 in. high in the centre, where the stem is placed) is bedded over with small pebbles, about the size of pigeons' eggs; and these, by drying rapidly after rains, prevent the damp from lodging about the collars of the plants, which, without this precaution, would, as it is technically called, damp off. Now, if gardeners would apply the rationale of this practice to the margins of basins, ponds, lakes, rivers, and all pieces of water whatever, natural or artificial, in pleasure-grounds, they would render the evaporation from these pieces of water wholly innoxious. The evaporation from clear water is simply injurious by increasing the quantity of moisture held in suspension by the atmosphere; but the evaporation from water containing a mixture of decaying vegetables from the park above it, contains, in addition to water, those deleterious gases known as malaria. As all pieces of water are liable to rise or fall with rains or great droughts, the breadth and height of the space along their margins, which is gravelled or covered with stones, ought to be such as that, in the greatest drought of summer, when the water is sunk to the lowest point, it should not expose any of its earthy bed to the air; and that, in spring and autumn, when it is raised to its greatest height by rains, it should not touch the leaves of the plants along its margin. This is the beau ideal mode of treating artificial water, where the object is to render it wholesome; and it is gratifying to find that it is as superior to the common mode of treating the margins of pieces of water, in its accordance with the principles of picturesque beauty, as it is with the principles of health.

6. That, in distributing the trees and shrubs over a park or pleasure-ground containing a piece of water, provision should always be made for the exit from the grounds of the vapours which arise from the watery surface. This is to be done by broad spaces of lawn or turf without trees, extending from one or from both ends of the piece of water, through the park or pleasure-ground, to ground on a lower level (see *fig.* 99.), where the air charged with vapour will find its way by its own gravity. Where this is neglected, parks in low moist situations, with trees scattered regularly over their surface, become covered with what may be described as one general pond of malarian vapour; or with a number of ponds, in which the vapour is dammed up by trees crossing the course which it would naturally take along the lowest level. The gardens of the New Palace at Pimlico may be considered as one immense pond of malarian vapour, confined by the palace and other buildings at the lower end, and by high walls along the sides; and which is prevented from being dispersed by winds or the sun, by the groups of trees, mounds, grassy banks, &c., contained in the interior.

286. *With a view to beauty, the distinctive properties of water*, as contrasted with those of ground are, clearness and brilliancy, the power of multiplying objects, coolness, and motion. These are the principal properties which concern the landscape-gardener; and it is difficult to imagine a situation in which one or other of them may not be exhibited, and turned to excellent account. The following rules refer to this principle:

1. Clearness in pieces of water is displayed by allowing them chiefly to reflect the sky; and brilliancy, by having the situation somewhat elevated, or otherwise so prominent that the water may catch the rays of the sun, and reflect them directly in the eye of the spectator. This is a kind of beauty not often desirable in landscape; but it may occasionally be wanted to contrast with others; and it has this advantage, that it may be introduced in a very limited space, to which it adds great cheerfulness.

2. The power of multiplying objects by reflection is by far the most valuable property of water, relatively to landscape-gardening. Forms, shades, and colours may thus be doubled; and the most forcible contrasts may be produced between water surrounded by trees, buildings, or other objects, and open lawn or pleasure-ground. Hence, it is seldom desirable to form pieces of water without planting trees or shrubs, or both, along its banks. Water, without wood, may display clearness, and convey the idea of coolness; but it cannot have that intricacy, variety, richness, and force of effect, which are produced in greater perfection by the shade, colouring, and forms of trees and shrubs, with the occasional aid of buildings and animated nature, than by any other means at the command of the gardener.

3. Coolness, as a property of water, is actually produced by evaporation; but its cooling effect in landscape may be considered as depending on the idea of coolness which we associate with water, and which has been originally derived from experience. This property in water renders it a desirable material for contrasting with gravel, buildings, rocks, or other objects, which, with reference to their effect in landscape, are considered warm.

4. The motion of water, in the imitation of its more common forms in nature, is displayed in artificial brooks, rills, springs, &c.; and in the imitation of more extraordinary natural appearances, in artificial cascades, fountains, and jets. As the motion of water may thus be displayed on a very small scale; the property of motion, and, as already mentioned, that of clearness, are, perhaps, of the most universal use in gardening; there being scarcely any ground-plot, however small, that will not admit of a fragment of rock, with a drooping fountain, or of a marble basin, or stone vase, of clear water, to reflect the rays of the sun, and tints of the sky.

287. *With a view to picturesque effect, water may be introduced into the grounds of every residence*, however limited it may be in extent; and the effect will depend, not on the magnitude of the piece of water, but on the character or expression which it is made to assume. Hence the following rules:

1. That, in very small places of even a few perches in extent, a surface of water, of not more than a few square feet, sunk in the ground, and with a gravelly, rocky, or stony margin, by reflecting the objects near it, and the sky, may give an extraordinary interest to the landscape; the water being kept clear, and perfectly free from mud and decaying objects.—(*See fig.* 100.)

2. That a brook or streamlet, however small, can never be successfully imitated, unless there be a current of water equal to that which is found in brooks of the same magnitude in a state of nature.

3. That the character of a brook being briskness, it should never be imitated by art, except where there is not only an abundance of water, but a surface having a considerable slope, in order that the water may run rapidly.

4. That, where a natural brook passes through a park or pleasure-ground, it may be improved in effect by expanding some parts of it into pools; and by the distribution of gravel, stones, and other rocky materials, along its banks.

5. That a river, which, to be natural, ought to indicate on its banks the progress and

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action of water, can never be imitated in a park or pleasure-ground, except where there exists naturally a considerable stream.

6. That a lake may be imitated wherever there is a sufficient extent of nearly level surface to excavate; or where the water may be made to cover an extensive surface, principally by throwing a dam across a shallow valley.

7. That a prolonged lake, tame river, or even a canal of traffic, is occasionally admissible in artificial scenery, under particular circumstances; and more especially when it is at such a distance from the eye, and so far below it, as to render it impossible to detect whether the water is in motion or stagnant; the water, in this supposed case, being perfectly clear. Thus a pleasure-ground or park, which occupies the upper part and the sides of a hill, may have a zone of canal, or tame river, intermediate between the upper part of the hill and the valley at its bottom; by which means this canal will form an interesting foreground from the park above it to the country beyond. This is beautifully exemplified in many places bordering canals; for example, at Offchurch Rectory, near Leamington, in Warwickshire; and at Wentworth Castle, in Yorkshire.

288. *Fishing-houses*, and other garden buildings, have often a very pleasing effect when erected near water, not only from the variety they introduce in the landscape, but from the pleasing effect of the views which may be obtained from them, particularly during the heat of summer, when the appearance of water seen from an ornamental building, like the Chinese temple (*fig.* 101.), has a very striking and beautiful effect. A fishing-house (*fig.* 102.) is a kind of summer-house, from the windows or balcony of which persons can fish, or sit to enjoy the cool breeze at their pleasure. The style of the house shown in *fig.* 102. is Swiss, and it consists of a circular porch, *a* in *fig.* 103.; a room, 11 ft. in diameter (*b*), with windows opening, like doors, into a circular gallery or balcony (*c*), partly projecting over the water, and sup-

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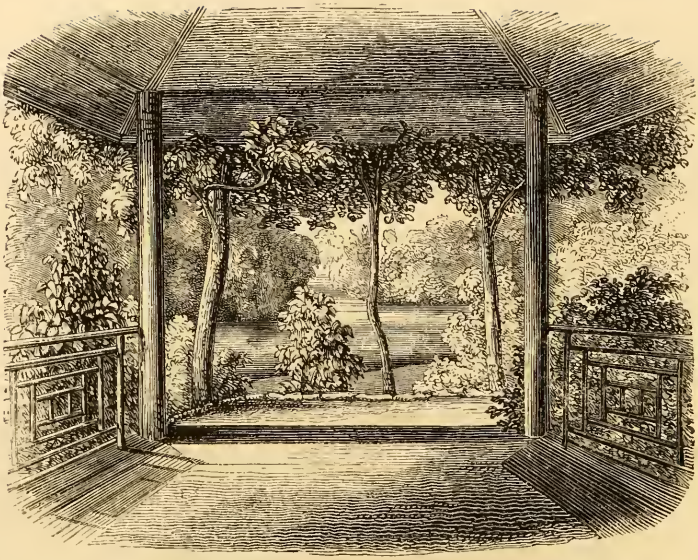

ported on brackets. More than half the balcony is sheltered by the large projecting roof of the circular room, which is also supported by brackets, as posts might obstruct the view, and be otherwise inconvenient. On each side

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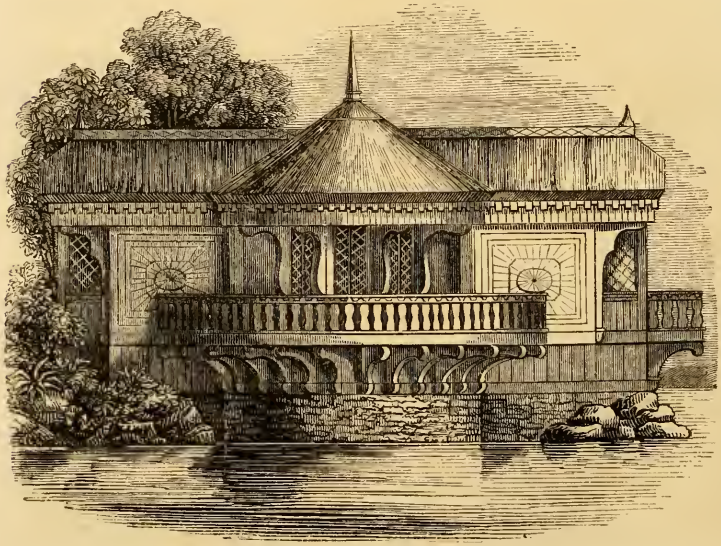

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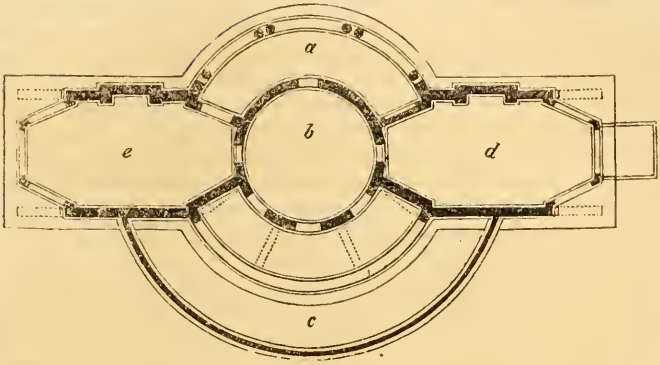

of the circular room are rooms (*d* and *e*), each 18 ft. by 11ft., for refreshments, &c., the one marked *d* having a balcony hanging over the water. A boat-house is another architectural appendage to water, of which there are many various kinds. *Fig.* 104. is one of the most simple of these, and it is merely

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formed in a bank, overgrown with shrubs and flowering plants. In other cases, the boat-house is formed under the fishing-house, or built separately, according to the taste of the proprietor.

289.—*The union of all the parts which compose a country residence, so as to form a harmonious and expressive whole.*—In the preceding remarks, we neither pretend to have embraced every part of which a place is composed, nor to have given all the details which belong to any one of the parts treated of.

Our object has been to give the reader materials for thinking on the different subjects connected with the formation of a residence where there are a few acres of ground, in order that he may endeavour to find a reason for every thing that we may in future propose; and, in short, that he may feel a greater interest in this work than if it were merely a series of arbitrary directions. In pursuance of the same object, we shall next consider the residence as a whole. After all the different parts which enter into the composition of a country residence have been duly weighed and considered by the proprietor and his landscape-gardener, and the proportionate extent of each agreed on, the next step is for the latter to put them together. It is chiefly in doing this that the artist has an opportunity of showing to what extent he is entitled to be considered as a man of genius and taste. It is easy to conceive that all the different component parts of a piece of music, a picture, or a piece of architecture, may be correctly executed; and yet that the want of due proportion between these parts may be so great, and the whole may be put together with so little connexion and harmony, as to form an object wholly without sentiment or expression,—a body unanimated by a soul. It is this expression, formed by the due proportion, connexion, and cooperation of all the parts, that constitutes the main difference between a work of art and one of mere mechanical skill. Two grand qualities in the artist, with reference to creating expression, are, the power of viewing every part of the scene which he is to create, with reference to the effect of the whole; and the power of foreseeing future effects. It is only by the union of these two qualities in the mind of the landscape-gardener, that the grounds of a residence can be formed into a composition, as perfect as a piece of architecture; every moulding of which, as well as every column and larger member, has reference to the elevation of the different sides of the building, forms a sort of index to it, and could not be removed without injury to its effect. Perhaps these remarks may be better understood by noticing a few of the mot common defects, or causes of defects, in country residences, than by describing a comparatively perfect model.

290. The *entrance lodge* is generally the first fault of a place that meets the eye of a stranger. Here the building and gates are very frequently either too mean, or too much ornamented; too large and substantial, or too small, for the mansion and its accompaniments. What the happy medium is, it may be difficult to say, unless a particular case were before us: but, in every age, there is a sort of conventional agreement among men of taste, as to what is proper, and what exceeds the bounds of propriety. If every part of a place should give the spectator some idea of the style of art employed in every other part, then it is clear that the lodge and gate should be in the same architectural style as that of the mansion; and, hence, where the latter is Grecian or Italian, the former should neither be Gothic, nor in the ornamented English cottage style. The boundary fence connected with the lodge should be modern, where the art employed is modern; but, in the case of Gothic, or Elizabethan, lodges, walls only are admissible; hedges, as boundary fences, not being chronologically correct when connected with buildings in either of these styles. Where the lodge and gates have patches of plantation connecting them with the boundary fences, but no scattered trees or groups to unite them to the mansion and the scenery in the interior, the principle of connexion is grossly violated, and one of the finest sources of variety in the

views along the approach road is neglected. A mansion set down in a park or lawn, without any scenery of an intermediate character, such as an architectural basement, a surrounding terrace, &c., is in opposition to the harmonising principle of uniting objects so powerfully contrasted as a house and a field, by scenery of an intermediate kind.

291. *The mansion is often seen inclosed in a patch of plantation*, which also includes the domestic offices; but it very frequently wants the connexion, which groups and small masses of trees would give it, with the general surface of the park. Sometimes the latter is too much crowded, by the trees being uniformly distributed over every part of it; and sometimes it presents a bald appearance, from the want of trees. Indeed, to adjust the proportion of trees and pasture, or clothed spaces and naked spaces, about a place, is one of those points of art on which more of the future effect depends than on almost any other. A residence, of which it may be said that it has just enough of trees and shrubs, and not too many, will generally be found a highly satisfactory one.

292. *There are certain defects in grounds and buildings*, which owe their existence to errors and omissions on the part of the first builder or planter; and certain other sins, perhaps of a more heinous nature, which are committed by the occupiers after the place is finished. The remote cause of these last errors is, the desire inherent in almost everybody who is in possession of a house and grounds which he can call his own, of doing something to it; and the immediate cause is, that this something is usually done solely with reference to itself, and without any regard to its general effect on the house or grounds, considered as a whole. Perhaps a new flower-garden is to be formed, and it must have beds in it, or statues to ornament it, like those at B or C: without considering that B is a castle, and C a palace, while the scene where the flower-garden is to be formed is, perhaps, a plain modern villa. The desire of imitating those above us is thus at once the cause of the spread of improvement, and of the introduction of much absurdity. The purchase of articles at sales, because they are good and cheap, or, perhaps, beautiful in themselves, is also often the means of spoiling the general effect of a residence. The young family of A., who are growing up, have acquired a taste for plants, and are desirous of having a green-house, which A. kindly purchases for them at the sale of the first neighbouring nurseryman who becomes bankrupt. This shed-like structure is placed against one end of the house, in a conspicuous situation; and the entrance-front has thus ever after a mean appearance. We have seen a handsome lawn spoiled by the desire of the lady of the house to have a piece of rockwork; and we have known the foundations of a house rendered damp by the occupier having purchased the flints and scoriæ of a rockwork at a sale, and, for want of any better situation, banking up the lawn front of his house with them.

293. *Planting single trees.*—Nothing is more common than for gentlemen of leisure, who have small country residences, to attend nurserymen's sales, and purchase articles they do not want, merely because they are cheap. These cheap purchases are often fatal to the general effect of a small place. Room must be found for the trees and shrubs which have been bought; and, wherever there is an open space on the lawn, one or more are put down in the middle of that space. "Surely, Mr. L.," we have been told a hundred times, "there can be no harm in putting down a single tree, more especially as we

always plant them in the middle of open spaces, where there are no others near?" Persons arguing thus, little know that a very few single trees, put down on this principle of "always placing them in the middle of an open space, where there are no others near," would destroy the effect of the finest place in existence. Single trees, in a park or pleasure-ground, are like the last touches of an artist in painting a landscape. The bold striking effects of light, shade, and character are given by the masses; but the expression of these masses, and the attractions by which the eye is led to enjoy them, are produced by the last touches. The great general effect of the grounds of a residence depends on there being open spaces where there are no trees, to contrast with other spaces which are entirely covered with trees; and the finish to these grand features of wood and lawn consists in the single trees and small groups which are distributed along their margins. Soon after Sir Henry Steuart's *Planter's Guide* was published, the idea of transplanting large trees by machinery took possession of many country gentlemen of leisure; and the breadth of effect of many lawns and parks, and the grouping along the margins of lawns in others, were destroyed, by always putting down these large trees in those open spaces where it was thought that they would not interfere with anything else. A gentleman who possesses one of the handsomest small places on the banks of the Thames, between London and Gravesend, covered almost the entire surface not occupied by old trees, with young single trees at similar distances, without even employing a gardener to guide his labourers in planting them. In such a situation as the very remarkable one to which we allude, before a single tree could be put down with propriety, its future effect should have been studied from various points of view; and there is no landscape-gardener who would not consider the putting down of even one tree, in such a case, a difficult and delicate task. But profound ignorance of any subject is favourable to courage, and our planter put them in by hundreds; but, fortunately, as they were planted three or four times too deep, in a soil consisting, in many places, of strong clay, almost the whole of them died the second year.

294. *Professional routine.*—We shall now go through what may be called the professional routine of fixing on a situation; making the plans for laying out a residence; and carrying these plans into execution.

295. *Fixing on the situation, extent, &c.—Fig.* 105. may be supposed to exhibit a portion of country, the greater part of which is to be sold by private contract, in lots as various in magnitude and form as the size and shape of the fields; or to be let on building leases. It may be supposed to have all belonged to the mansion and park *a*; but that, owing to death or other causes, the present owner of that park has determined to limit himself to it, and to the adjoining fields and farm-yard (*b*, *c*, *d*, and *e*). All the other fields, therefore, are to be sold or let; and we shall suppose them to have been looked over by a gentleman desirous of forming a country residence, who has fixed on the fields *f*, *g*, *h*, *i*, and *j*, containing in all about ten acres. Here we must notice what is a common error, often committed in the first step of forming a country residence; viz. that the party (say a tradesman, a merchant, or a professional man) chooses the situation, and fixes the conditions of purchase, without consulting a surveyor; or, what is better, some friend who has a practical knowledge of soils and situations, and of what are really essential in these to the formation of a comfortable residence. Perhaps the

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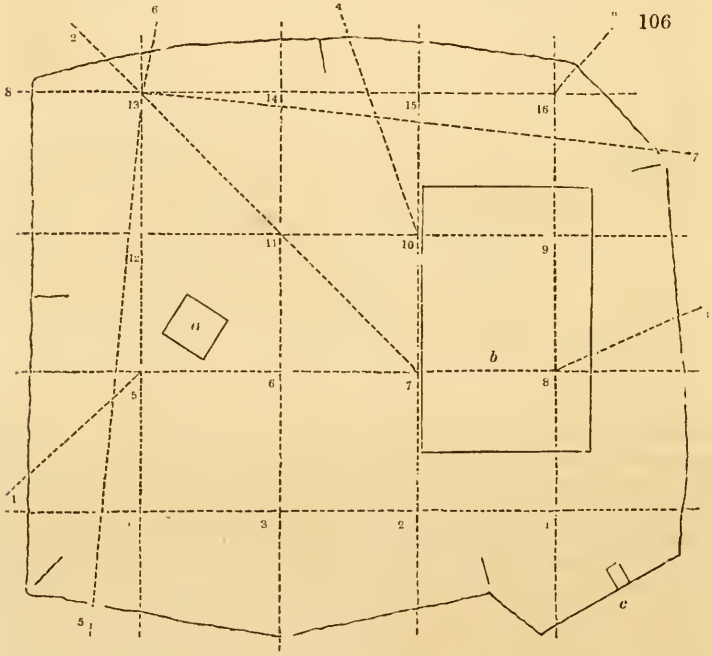
party who, in his want of knowledge, has rashly ventured to judge for himself, was too modest to let it be known to his friends that he intended to purchase land; or, perhaps, by keeping the matter quiet, he expected to get it somewhat cheaper; or, perhaps, one object was to prevent his friend and neighbour, Mr. A. B., from getting what he considered one of the most advantageous of the allotments. At all events, he has chosen these fields entirely on his own judgment, and, in one point of view, judiciously, because they lie very compactly in a ring fence. It is proper to mention, however, that there are situations, where, when the object is to form a country residence, compactness of outline possesses fewer advantages, and is in fact much less desirable, than an outline of great irregularity. This depends on the natural inequalities of the surface, and on the distant prospect: for example, in the plan before us, had there been a natural ridge proceeding from *f* to *g*, and thence by *k* to *l*, terminating in a considerable hill at *m*, then we should have preferred these five fields to the five which lie so compactly; notwithstanding the great extent of boundary line which in the latter case there would have been to keep up, and the circumstance of the fields *h*, *i*, *j*, *n*, and o lying, as it were, in the midst of the property. This, however, would be no disadvantage in an ornamental point of view; because we are supposing the ridge *f*, *g*, *k*, *l*, *m* to be far higher than the adjoining fields, and to overlook them entirely. The proprietor of such a ridge might build his house on the hill (*m*); have a going approach along one side of the ridge, and a returning approach along the other; the trees along both

approaches being arranged so as to form foregrounds to the distant scenery, and to exclude near objects in the adjoining properties, which might be considered as not worth looking at. Along the centre of the ridge, there might be an irregular-margined avenue of turf, in the manner of the green drives at Fonthill, Goodwood, Stourhead, &c.

296. *Character of the country.*—But to return to our choice. The five fields, *f* to *j*, are supposed to contain no great variety of surface; and the country around to be tame rather than otherwise, and in the same style as that which lies north of London, along the Edgware Road. The purchaser, we shall suppose, now employs a landscape-gardener, whose first business is to procure a plan to be made, such as *fig.* 106., in which the ring-fence of the



five fields is shown, enclosing a space thrown into squares by dotted lines. These dotted lines are, as they ought to be in every working plan of this kind, in the exact direction of north and south, and east and west, for more convenient reference and description, and future use in marking out improvements on the ground. Before the squares are drawn on the plan, they ought previously to be marked out on the ground, and a small stake placed in every intersection of the lines; that is, at every corner of each square, as shown in the figure. The squares may be 50 ft., or 100 ft., or 200 ft., on the side, according to the extent of the plot, the inequalities of its surface, or the alterations which are to be made in it. In the case before us, they are sixteen in number, exclusive of the portions of squares round the boundary; each square is 150 ft. on the side, and each contains half an acre and 22 poles.

On an estate where the surface is flat, the squares may be large; because, from the general sameness of the whole surface, the character of the ground included in one square must be very like that in all the others: but on a very irregular surface they must be small; because each square may have a different character of surface. By having a stake with a number on it, in the corner of each square; by having these numbers in regular series from one side of the plot of ground to the other; and then by having corresponding numbers on a plan, and a memorandum-book for reference and description, it is evident that a tolerably correct idea may be conveyed of the soil, subsoil, surface, and distant views, even to a person who has not seen the estate.

297. *The memorandum, or field-book* may have the same numbers on two opposite pages, as in the specimen below: the one to describe the present state, and the other the intended alterations or improvements, thus:

Present State of the Five Fields, purchased by Mr. C., and intended to be laid out as a Villa Residence.— The numbers preceding each paragraph refer to the numbers in the squares in the plan (fig. 106.).	*Remarks as to the Improvements which may be made on the Property purchased by Mr. C., &c.*
1. Surface here only about 5 ft. higher than the public road, towards which it gradually slopes. Soil loamy.	1. This, being the lowest part of the ground, and also near the public road, would seem an eligible place for the entrance-lodge and the approach.
2. Surface still higher.	2, 3, 4. Soil good either for trees or pasture. Little or no distant view; and, therefore, this part may, if thought desirable, be covered with wood.
3. Continuing to rise.	
4. About the same height as at 1. Surface apparently wet in winter, judging from the kinds of grasses growing on it; such as *Carex*, *Phleum*, &c.	
5. One of the highest points within the ring fence, from which, in the direction of N. E., a tolerable view of the village church is obtained, backed by a green hill, as in sketch No. 1. (*fig.* 107.). The grasses chiefly rye-grass and meadow-fescue.	5. A few yards S. E. from this point promises to be the best situation for the house, as the ground falls from it on three sides. Considering that the country has an equal claim in point of beauty all round, a square house seems the most desirable; and a square is accordingly drawn on the plan, at *a*, in *fig.* 106.

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6, 7. Ground flat, but fully as high as at 5. The view from 7 to the S. E. shows a viaduct thrown over a valley for a railroad. No. 2. (*fig.* 108.).	6, 7. The offices may very properly be placed in this direction, so that the view may be obtained from the pleasure-grounds and the conservatory, which may be placed against the kitchen-court. There is here a very fine opportunity of connecting the conservatory with the kitchen-garden, by means of an architectural conservative wall, with an open or covered walk.

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8. Even surface, and soil loamy, with a view, in a direction w. by s., of farmer Swiney's house and farm-yard. See sketch No. 3. (*fig.* 109.).

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8. A number of luxuriant docks growing here; on seeing which Mr C. said that the soil was undoubtedly bad. Endeavoured to convince him that docks are never found growing luxuriantly on bad soil; and, in short, that they are generally a proof of good, deep, loamy soil, as was the case here.

9, 10. Surface even and soil good. From No. 10., a distant view, in the direction of s. by e., of a viaduct for the railroad over the river Colne. See sketch No. 4. (*fig.* 110.).

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9, 10. The ground included in the squares 8, 9. and 16. being good and even, and also the adjoining squares eastward and westward being of the same description, this part of the property appears to be a very favourable situation for the kitchen-garden, which is accordingly indicated by a parallelogram at *b*, in *fig.* 106.

11. Surface undulating; subsoil said to be stony. White clover.

11. This ground will require more smoothing, in order to produce an artistical surface, than any which we have yet gone over; but the effect will be satisfactory.

12, 13. Ground falls from this point to the boundary, both in a s. and an e. direction. The view to the n. by e. is of the mansion belonging to the park (*a* in *fig.* 105 in p. 199.), shown in sketch 5. (*fig.* 111.), and

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nearly directly s. to the country villa of Captain B. See sketch No. 6. (*fig.* 112.).

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The view w. by n. shows the river Colne, with an old bridge, as per sketch No. 7.

12, 13. Marks of ridges on the surface, the ground having been here under corn three or four years ago. At a short distance nettles growing; on which Mr. C. said, ironically, he supposed that these plants were also an indication of good soil, as well as the docks. Told him that the nettle was a domestic plant, and was seldom found anywhere, except about human habitations; and that, properly speaking, it could not be considered as an indication of the natural state of the soil, but only of the accidental circumstance of lime rubbish having been placed there, in consequence of the proximity of buildings. Mr. C. laughed at this, as the field was at a considerable distance from any house. But, on enquiry, we found that a barn had stood there formerly; on which Mr. C. observed that the nettle was not only a domestic plant, but a historical plant, as it told the previous history of the ground on which it grew.

A good situation for a summer-house, on account of the fine views seen from it; and on the supposition that the pleasure-ground walk passes this way.

113

(*fig.* 113.); and direct E., the windmill on the heath, as per sketch 8. (*fig.* 114.).

114

At 14, 15, and 16, the ground is low, and the views of the distant scenery not marked by any particular feature. Near 16., a view is obtained of an old barn turned into a cottage, in the direction of S. W. See sketch No. 9. (*fig.* 115.).

115

14, 15, and 16. Low, without much exterior view, and may therefore be planted, if thought desirable. Being at one corner of the property, this would be a good situation for an archery-ground, or bowling-green. On mentioning this, the Misses C. appeared delighted at the thought of an archery-ground; but Mr. C. seemed to incline to a bowling-green. Mrs. C. thought it would be a good place for the younger children to learn to ride.

The left-hand column above gives a general idea of the surface, and sufficient indications of the soil and subsoil to enable the landscape-gardener to assist the architect in determining the best situation for the house and offices; and the remarks in the opposite column are for the same object, and also for the sake of indicating, as far as this can be done from incidental observations dropped from time to time, the taste and wishes of the proprietor and his family. The situation of the house we have indicated on the plan *fig.* 106. at *a*, that of the kitchen-garden at *b*, and that of the entrance-lodge at *c*; and these three points, being fixed on, naturally determine the situation of the offices, which must be between the house and the kitchen-garden, and that of the approach, which must be between the lodge and the house, leaving the remainder of the place to be laid out as pleasure-ground.

298. *Another mode, by which the most interesting views from different points within the ring-fence may be exhibited*, is shown in *fig.* 116; in which the estate, and the views from it, are drawn to a scale one half smaller than in *fig* 106. and in the views (*figs.* 107. to 115.) given in the descriptive column. By the mode shown in *fig.* 116., all the different distant objects given in the sketches in the descriptive column, pp. 201, 202, and 203., are shown in the exact position, and at the relative distances at which they lie from the different

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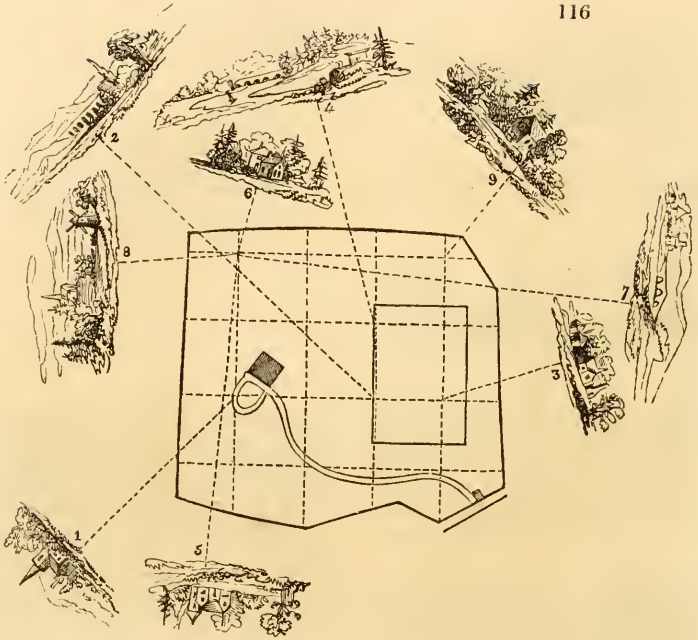

points; the scenery of the foreground, and that of the middle distance, being, in this case, as in the descriptive column, taken no notice of.

299. *A third mode consists in giving a panoramic view of the entire country*, exterior to the ring-fence of the part to be laid out, as in *fig.* 117. This panoramic view is supposed to be taken from a temporary platform, erected in the centre of the exact situation where the mansion is to be placed, and raised 20 or 30 feet above the natural surface of the ground. The artist, in taking such a view, changes his position six times, so as to include in the panorama six connected views, each embracing an angle of 60°. This mode is calculated to give a very clear idea to a purchaser of the kind of distant scenery which will be viewed from the windows of his intended habitation; and it may be very conveniently adopted in a case which sometimes occurs; viz. of an English gentleman engaged in business in South America, or any distant country, who sends home orders to have grounds purchased, and a house built, preparatory to his return to England. The first step, in such a case, previously even to purchasing the land, would be to send out a ground plan, surrounded by a panoramic view, as in the figure just referred to.

300. *Where the surface of the ground is considerably varied*, and where it is also desired to form a correct idea of the subsoil, and, perhaps, of the mines and minerals, the kind of sectional plan exhibited in *fig.* 118. may be adopted. In this plan, the area is first thrown into squares, by N. and S. and E. and W. lines, as in giving surface plans. The lowest point on the ground is next fixed on, as the level of the base line of all the sections; and on this line the rising

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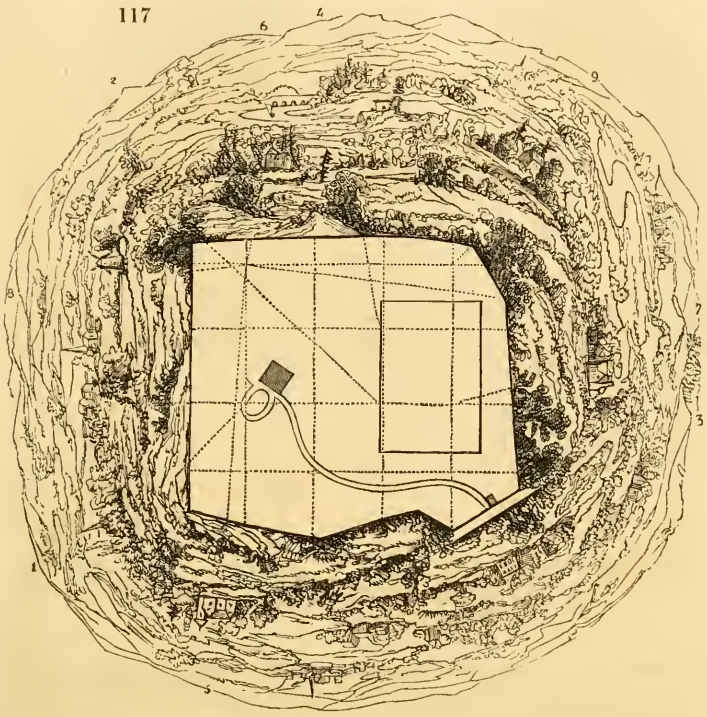
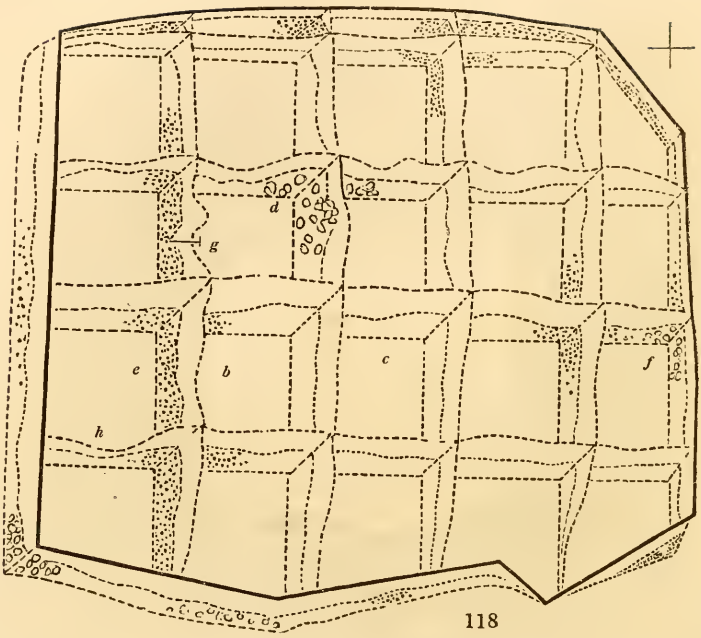


of the ground above it, on the four sides of every square, is indicated, as in the figure. The nature of the subsoil may also be shown in such sectional plans (for example, whether it is stony, rocky, sandy, or gravelly); and, what is as useful as a knowledge of the subsoil, the depth and direction of under drains, the situation of springs, wells, pits, &c., may be accurately delineated. The levels are obtained in the manner well known to surveyors, along the lines forming the squares; and the nature of the subsoils, mines, minerals, &c., is ascertained by digging pits, boring, or trials with an iron probe. Where the object does not extend beyond those of the cultivator or the landscape-gardener, the nature of the subsoil, for 3 or 4 feet below the surface, is all that is required to be known; and this can be attained with very little trouble. In *fig.* 118., *a* is the lowest point in the ground, from which point the approach is made to enter; *b*, is a square including the highest part of the grounds, on the surface of which the house and offices are placed; *c*, the appearance of the section when the subsoil consists of the same earths as the surface soil; *d*, the appearance of loose stones; *e*, sand; *f*, gravel; *g*, a hollow in the surface where there is a pump-well; and *h*, a hollow from which brick earth has been dug.

301. *The working surface plan.*—Having, by means of the plans and sections already described, and of conversations with the proprietor and his family, acquired a knowledge of what are technically called the data and



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desiderata of the place, the next business of the landscape-gardener is to form a working plan for laying out the proposed improvements; the situation of the house, the kitchen-garden, and the entrance-lodge, being already fixed on, as before indicated. We shall suppose that the numbered sticks at the angles of the squares still remain on the ground; because it is more convenient to adopt squares of the same dimensions as those already marked on the ground in the plan on which we are to trace the roads, walks, kitchen-garden, plantations, &c., in detail. The sides of the squares, also, in this plan, must (in order to admit of readily indicating objects with reference to the points of the compass) be directly east and west, and north and south. It will often happen that the same plan which is used to indicate the levels of the surface, and the principal points of view, and to afford data for the description given in p. 201., will serve also for tracing the lines which constitute the working plan; but, in the present case, the plan (*fig.* 106., p. 200.) is on so small a scale, that, if we were to trace the necessary lines upon it, it would become confused, and unfit for our purpose. *Fig.* 119., therefore, must be had recourse to; and we shall go over the different lines in it, and briefly give our reasons for producing them.

302. *The position of the house (a) and lodge (c) being fixed on*, the road between them might either have been made straight or curved. If it had been straight, it would have been inconsistent with this style of art; and, if the grand sweep which it takes had been bent to the right instead of to the left, as at *d*, it would have interfered with the arrangements connected with the offices and the kitchen-garden. Before arriving at the entrance-front of the

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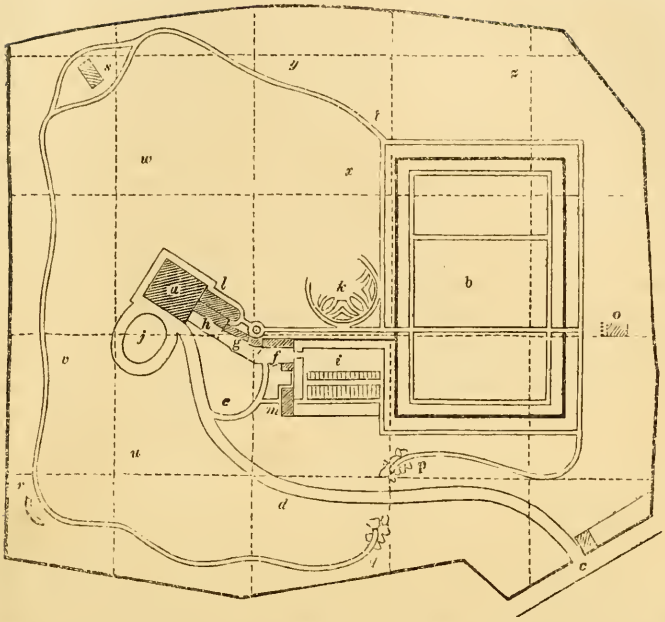

house, there is a branch road (*e*) to the stable offices (*f*), which are connected on the one hand with the poultry-yard (*g*) and the kitchen-court (*h*), and, on the other, with the reserve ground to the kitchen-garden (*i*). This branch road (*e*) is made narrower than the main approach, in order that it may never be mistaken for it: it is bent, so that persons either going to the front entrance of the house, or coming from it, may never see along it as far as the gates of the stable-court; and it is joined to the main approach in such a manner, that it may rather invite a person to enter on it, when returning from the house, than when going to it. The reason of this is, that this branch road will be principally used by the carriages of visiters going to the stable offices, after they have set down their company at the front door of the house; and by the carriage of the family going from the stables to the house, and back again, after the carriage has been used. For one person, therefore, who comes out of this branch road and turns towards the entrance-lodge, there will be at least ten who come out of it, and turn towards the mansion, agreeably to the inclination of the road at its junction with the approach. In short, tradesmen's carts, and carts with provision for the horses and poultry, with manure and other articles for the garden, and with coal, &c., for the kitchen-court, will include every kind of carriage that goes along this branch road, from the entrance-gate.

303. *Instead of a broad mass of gravel for carriages to turn on*, immediately before the entrance portico, we have preferred retaining the road there of its usual width, and carrying it round the large oval of turf (*j*). This is not only a much safer mode of turning a carriage, but gives an idea of ample

space; whereas a dilated surface of gravel, immediately in front of a portico, always conveys the idea of confinement, and of the front or entrance-court to a town mansion. The width of the approach road is supposed to be 15 ft., in consequence of which two carriages may pass each other with ease without going off the gravel; and, in the case of a large party, 50 or 100 carriages might wait round the oval, and any one of them be called out to take up company, without the slightest derangement to the others. All that is necessary for this purpose is, that all the carriages in waiting round the oval should stand along one side of the road, leaving the other side free for each carriage, as it is wanted, to turn out of the line and drive up to the door of the house.

304. *The ground plan of the house and of the offices*, of the conservatory (*l*), and gardener's house (*m*), we shall leave to be determined on by the architect, only stipulating that their precise position, as indicated in the plan, shall not be altered; and that there be the proper drainage to a main sewer, commenced at the house, and conducted in a right line through the kitchen and other courts, and through the reserve garden, to the boundary fence, with manure tanks in the reserve garden (see p. 160.); and that over the stables, or in some conspicuous part of the offices, there be a handsome turret clock, the dial of which may be seen from the windows of the kitchen, and from those of the gardener's living and sleeping-rooms; and from the forcing-ground.

305. *Mode of concealing the offices.*—The position of the house *(a)* and the kitchen-garden *(b)* being fixed on, the most convenient situation for the offices, as we have already observed, is between them; and to disguise these offices, or, at least, the courts belonging to them in which the business of each office is carried on, nothing can be more convenient than garden structures, or garden scenery. In the more ordinary cases, a shrubbery may thus serve to disguise the offices, and connect the house with the kitchen-garden;

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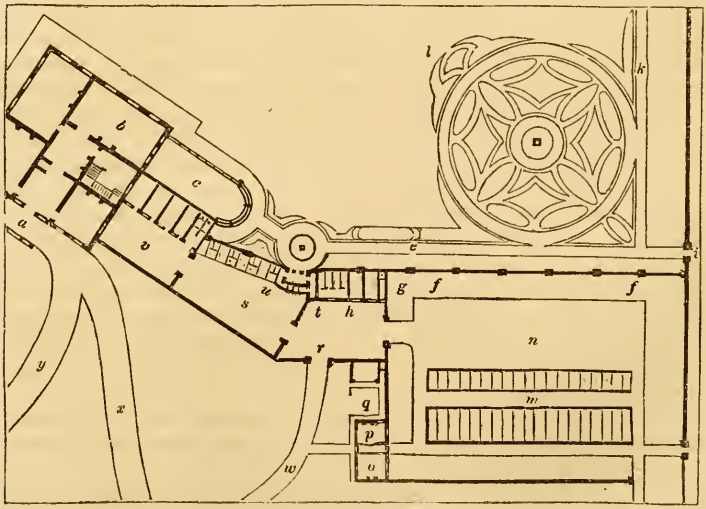

but, in cases where more art and expense are employed, like that before us, instead of the shrubbery, there may be a conservatory of an architectural character, to harmonise with the house; and, adjoining that, either a conservative wall, with or without a glazed veranda, or a wall with a common veranda. The conservative wall is supposed to be covered with the finer kinds of woody plants, and the supports of the veranda with climbers and creepers. Through this wall, whether conservative or common, there may be private entrances for the master and mistress to the stable-court and poultry-yard, as indicated in *fig.* 120., which shows the plan of the offices on a larger scale. In this plan, *a* is the entrance-portico to the house; *b*, the drawing-room, with three windows at one end (opening down to the floor, and serving also as doors), which look into the conservatory. In this there is a broad walk down the middle (*c*), terminating with a door in the centre of a semi-circular end, outside of which are steps descending to a circular basin and fountain, beyond which is the walk (*e*) in front of the conservative wall (*ff*). Instead of a basin and fountain, a circular stage of stone steps for containing greenhouse plants in the summer season, may terminate in the centre in a sundial, such as *fig.* 121.; and in that case the basin and fountain may be transferred to the centre of the flower-garden. The kind of fountain there used may resemble *fig.* 122. This walk terminates in an archway (*i*), which forms the main entrance to the kitchen-garden; and in the angle at the right is the flower-garden (*l*), which is also shown in the same position at *k*, in *fig.* 119. There is a walk at *k*, in *fig.* 120., communicating with the other parts of the pleasure-ground. There is an open loggia with a seat, opposite the fountain; and on each side of this loggia is a small door, the one forming an entrance for the mistress to the poultry-yard, and the other an entrance for the master to the stables: here are also summer water-closets. In the reserve garden, the hot-houses and pits are shown at *m*; and the open area for composts, manure, &c., at *n*: o is the gardener's kitchen; *p*, his living-room; and *q* his private garden, near which are a fuel-shed and a privy: *r* is the entrance to the stable-court, in which, at *t*, there is the private entrance, mentioned above, from the loggia. The stables, the two coach-houses, and a privy for the men-servants, are shown to the right and left of *h*. Here also is the fireplace to the flues in the conservative wall. The poultry-court is shown at *s*; and at *u*, the private entrance to it from the loggia. The poultry-yard is supplied with water from the overflowing of the basin and fountain, carried to it under ground. The poultry have access to the stable-court through a small opening in the wall, that can be closed at pleasure; and to the open lawn and the kitchen-court, through other similar openings. The entrance to the kitchen-garden is shown at *i*; and there is also a servants' entrance from the approach. Part of the branch road leading to the stables is shown at *w*; part of the approach, at *x*; and part of the sweep round the oval, at *y*.

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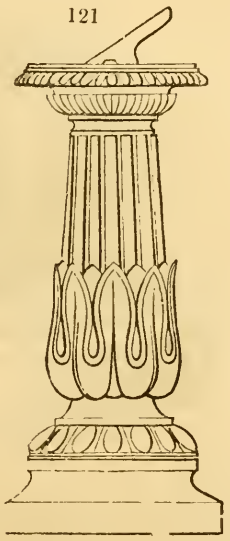

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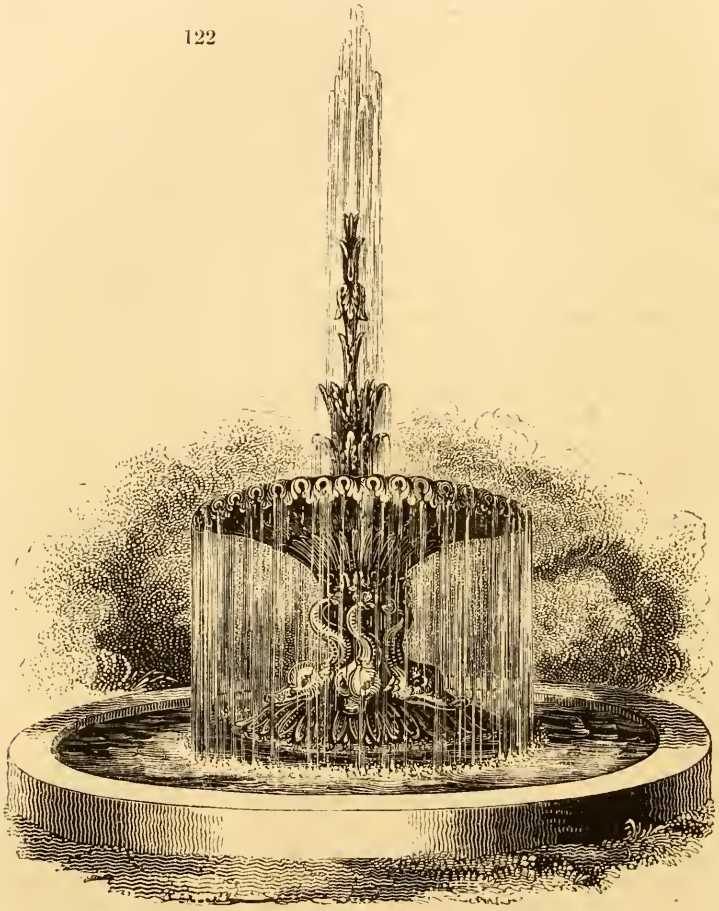

306. *The conservative wall* (*ff*) should not be a common erection, presenting only a flat perpendicular surface and a horizontal line at top; it may have piers at regular distances, terminating in caps surmounted by vases, above the height of the wall, but arranged in form and proportion, so as to harmonise with the conservatory and the house. In the case of a Gothic or an Elizabethan building, these piers and their terminating ornaments should, of course, vary accordingly. Instead of piers, the face of the wall might be broken by arched recesses; and, while a more delicate kind of plant was trained against that part of the wall which formed the back of each recess, a more hardy sort might be trained against the projections between them. We have seen a wall of this sort at Genoa, on which all the recesses were covered with roses, and the piers with ivy; the effect of which was beautiful, as the roses continued in flower throughout the year. The same effect might be produced in England, by having the wall flued, and protected by matting

during severe weather. Where the style was Gothic, the wall might be covered with a series of piers and intersecting arches; and, if the piers and imposts of the arches were covered with ivy, and the rest of the wall with deciduous plants, the effect, more particularly in winter, would be very striking. An excellent plan for varying such a wall is, to form the ground plan in a zigzag line, with piers at the angles; in which case, the length of each angle may be 10 ft., and the deviation from a straight line from 2 ft. to 3 ft. In going along the walk in front of such a wall, one series of angles would meet the eye; and in returning, another series. Another plan is, to have the wall straight, and a temporary or permanent roof projecting from it. In this case, if the roof were permanent, it ought to be composed of glazed sashes, which might be taken off in the summer season, and used for growing melons, leaving the pillars and rafters which supported the sashes, as fixtures; and these might be covered with rapidly-growing climbing plants. Such a roof ought to extend over the walk, in order that the latter may be used during rainy weather in summer; and that, during the most severe frosts in winter, it may afford a somewhat more temperate place for taking exercise than in the open air. The most complete glazed veranda of this kind would be one where the whole of the skeleton framework, as well as the sashes, might be removed in summer, without leaving any marks to disfigure the scene, and replaced every autumn. A temporary veranda, in which the framework is to be covered with hurdles clothed with thatch, or with canvas fixed to framework or oiled paper, forms a very good protection for plants while in their dormant state; but requires to be removed much sooner in spring when they begin to grow, than a glass roof; because, when the plants begin to grow under an opaque roof, they become etiolated and blanched for want of light. In general, conservative walls should be flued, in order to give the gardener the power of assisting the ripening of the wood in autumn; and, in this case, the fireplace might be conveniently situated behind the wall, as indicated in the plan *fig.* 120., at *g*, where it is placed in the corner of the stable buildings. A conservative wall may often form one of the sides of a range of office buildings; and this is the case with a part of the wall we are now describing, which forms the side wall to the stable (*t*) and coach-house (*h*).

307. *The conservatory*, it will be observed, has a south-east aspect; while the conservative wall, and the forcing structures (*m*) in the reserve garden, front directly to the south. By turning to the plans *figs.* 107. to 116., it will be seen that the distant views from the lawn front of the house, and from the walk in front of the conservative wall, are equal to any obtained from other parts of the grounds. Several designs for conservatories will be given in an after part of this work.

308. *The situation of the circular flower-garden* at *k* in *fig.* 119., and *l* in *fig.* 120., is good in every point of view. It is completely sheltered from the north and east by the conservative wall and the kitchen-garden wall; and the side next the south is open for the free admission of the sun and air throughout the year. The walk from the flower-garden along three sides of the kitchen-garden, and leading to the point *n*, is made straight, and parallel to the walls; being, as we consider it, governed in direction by the latter. The space between the wall and the walk is a border, which may either be devoted to ornamental shrubs and flowers, the wall being covered with half-hardy ligneous plants; or it may be planted with culinary vegetables, and the wall

covered with fruit-trees. In either case, the exterior space is supposed to be turf, varied with trees and shrubs. The subdivision of the kitchen-garden into compartments, by walks 6 ft. broad, is so obvious an arrangement as to require no remark. The walls we shall suppose to be of brick, 12 ft. high, and built hollow. The two walls which form the ends, having each one side facing the south, may be flued. At *o* is a rustic building of an architectural character, so as to be ornamental, which serves as a shed in which various articles may be kept, that are required in the pleasure-ground, and partly also in the kitchen-garden. Among these are hurdles for dividing the lawn, or hurdling off portions to be fed by sheep; portable racks, mangers, &c., for feeding sheep and lambs in winter and spring; trees which have been thinned out, and are to be cut up at a convenient season, for poles, or sticks for peas, and other uses; reed-hurdles, canvas and oiled-paper frames, &c., for protecting fruit-trees, and the plants on the conservative wall; and, in short, all articles required in the garden, which are too bulky or numerous to be kept in the reserve ground.

309. *The pleasure-ground walk*, from the point *n* to *p* in *fig.* 119., is to be lowered by forming an artificial winding hollow, or valley, and placing the walk in the bottom of it. At *p*, this hollow is supposed to be so much below the level of the approach road as to admit of the walk in it being carried under the road through a tunnel. Both sides of this artificial hollow are intended to be densely clothed with evergreens, to prevent any person on the walk from seeing any object on the approach, or discovering that he is at all near it; and also to prevent the sunk wall from being seen by persons driving along the approach. The direction of the tunnel under the road must be perfectly straight, in order that the light may penetrate freely through it; for, if bent so as to obstruct the direct passage of the light, it would appear dark and gloomy while entering from either end. The arch may be of brick or stone, set in cement; and it may be covered with a coating of clay, or of asphaltic mastic, so as to prevent the surface water from sinking into it. The interior of the arch, if built of stone, may have open irregular joints, in the rustic manner; and something of the same sort may be effected in brickwork, if the arch be first built in the usual manner, but with an extra half brick in thickness, and the soffit afterwards blocked out with the aid of cement so as to resemble large stones, and weather-stained so as to imitate an arch of great antiquity beginning to decay; or the bricks which form the soffit of the arch may remain of their natural colour, but be broken and stained in such a manner as to imitate great age. Both extremities of the arch may terminate in irregular masses of stone, or with vitrified brick, placed according to art, as a finish: but great taste and judgment are required, not to overdo this part of the structure. Above all things, in tunnels of this description, let no attempt ever be made to communicate a grotto-like character, by lining the arch with spars, shells, stalactites, &c., as if it were intended for a place to linger in, and contemplate these, and other grotto-like or hermitage-like objects. In short, no attempt ought to be made to give the tunnel the appearance of being anything else than what it is (that is, an archway thrown over a sunk walk), except with reference to age. The older such an arch appears to be, provided there be no indication of insecurity or rapid decay, the less objection is likely to be made to its use, by a stranger, as a place for a walk to pass through. Whatever is very old, and at the same time very strong

and secure, commands so much respect on account of these qualities, that other points are not thought of: we cannot hesitate to use a passage that has apparently been so often traversed by others before us; and that we may fancy has been only made for the convenience of exploring what lies beyond. Were such a tunnel to appear to be constructed of raw brick, or stone newly dug from the quarry, the question would arise in the mind of a stranger, why it had become necessary; and suspicions might arise as to some trick or deception about to be played off; or that some advantage had been taken in the way of making the place appear larger or better than it really is.

310. *Supposing the subsoil to be very wet*, and incapable of being drained to any great depth, then, instead of conducting the walk under the approach in a tunnel, we would carry it over the road on a bridge. In this case, the approach road should be placed in the bottom of a hollow, and the bridge should be sufficiently wide to allow of a plantation being made on each side of the road over it, so as to conceal the approach from the spectator on the walk. In short, the approach should appear rather to pass through a short tunnel than under a bridge; and the same remarks as to age, dryness, light, strength, &c., will apply, as in the case of the sunk tunnel for the walk. Many persons, in such a case as this, would propose to carry the walk over the approach road, on some kind of iron bridge; perhaps even one on the suspension principle; but such bridges, though excellent in themselves, and admirably adapted for useful purposes, are the very reverse of rural or picturesque. Their lightness does not at all harmonise with the forms of trees and shrubs, and of the rough surface of their trunks and stems; and the associations connected with iron and its manufacture are much more at variance with rural life than those which arise from the works of the builder or carpenter, to which mankind have been accustomed from the most remote ages. Where it is desired that the grounds of a residence should appear truly rural and picturesque, we would allow of no iron gates, iron hurdles, or wire fences; much less of tree guards of iron, iron seats and benches, iron trelliswork, iron stakes for plants, &c. Where, however, a high degree of elegance and finish was to be joined to the picturesque, such as near the house, we would allow of a wire fence, to separate the lawn from the park, paddock, or sheep walk; and, for grand mansions, castles, and palaces, we would admit of highly wrought entrance gates; but this is as far as we could go. Of course, we do not object to iron in the construction of verandas, glazed structures, &c., where it assumes an architectural character, and is, besides, disguised, so as to appear like wood. Our principle is, that we object to iron, where, from the form of the article, the material of which it is composed is obvious to the eye of every spectator; and, consequently, its use interferes with rural and picturesque beauty.

311. *A rustic seat.*—From *q* in *fig.* 119. p. 207., where the walk emerges from the tunnel, it gradually rises till we arrive at the seat *r*. From this seat, which may be a rustic thatched structure, in the manner of *fig.* 123., with a wall behind, and open arches in front supported on rustic pillars, a good view of the entrance front of the house is obtained, which will have a somewhat striking effect upon a stranger, his last view of it having been the very opposite side, viz. the conservatory front. The construction of this seat is as follows:—The whole of the ground on which it stands, being dug out to the depth of 2 ft., is filled in, to within 6 in. of the surface, with concrete; or with

chalk and flints, or gravel, rammed hard, and finished with a level surface. On this are raised the bases of the rustic pillars which support the roof, which bases should each consist of a single stone; or, if it is wished to be economical, of brickwork, which will reach as high as the intended surface of the floor, and be there covered with a square or an octagonal paving-tile. On these

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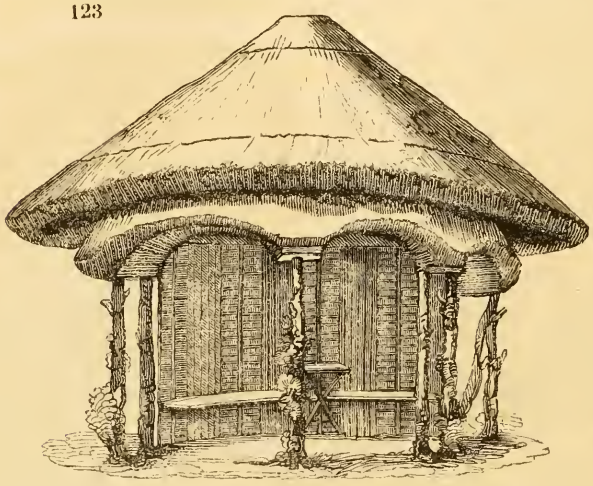

plinths the rustic columns are placed, and connected temporarily at top by strips of deal nailed to their sides. The columns, or props, for the back part of the structure, will be placed upon projecting plinths, from one continued plinth: because they are not intended to be seen on the inside, and to appear detached only an inch or two from the wall on the outside. Standards must now be raised, so as to form the skeleton for the solid part of the back wall; and this skeleton must first be covered with thin boards on both sides. This being done, the columns all round the structure are to have caps placed on them, consisting of squared blocks of wood, somewhat longer than the nine-inch tile which formed the plinth below, but of the same width. On these, skeleton arches are to be constructed, and afterwards a skeleton roof. The roof, on the inside, is to be clothed with thin boards, so as to form the interior of a cone; and on the outside with laths, so as to render the exterior of the same shape. The next step is to clothe the exterior of the cone with reeds or thatch, as in the figure. The interior being now secured from rain, the floor may be paved with pebbles, or with sections of the trunks of trees placed endwise, or with brick-bats placed on end; and the interior of the back wall may be covered with strips of wood, of such kinds as have a thin bark, such as hazel, birch, &c., disposed as in the figure. The exterior of this wall may be clothed with rough bark, such as that of the oak, covered with lichens, moss, &c. The soffits of the arches should also be covered with strips of smooth-barked trees, with the bark on; as should the whole of the interior of the cone, which forms the ceiling. There remains only to fix the seat, which is a simple bench, attached to the wall behind, and with supports in front.

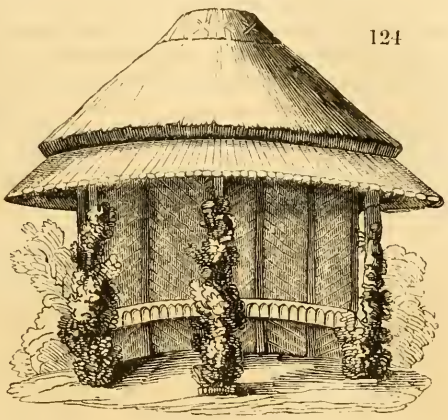

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Fig. 124. is another design for a rustic seat of the same general character, but on a smaller scale, and more elaborately finished. The lower part of the bonnet roof, instead of being of thatch, is of strips of wood with the bark on, closely joined, so as to exclude rain. The seat is also more elaborately finished.

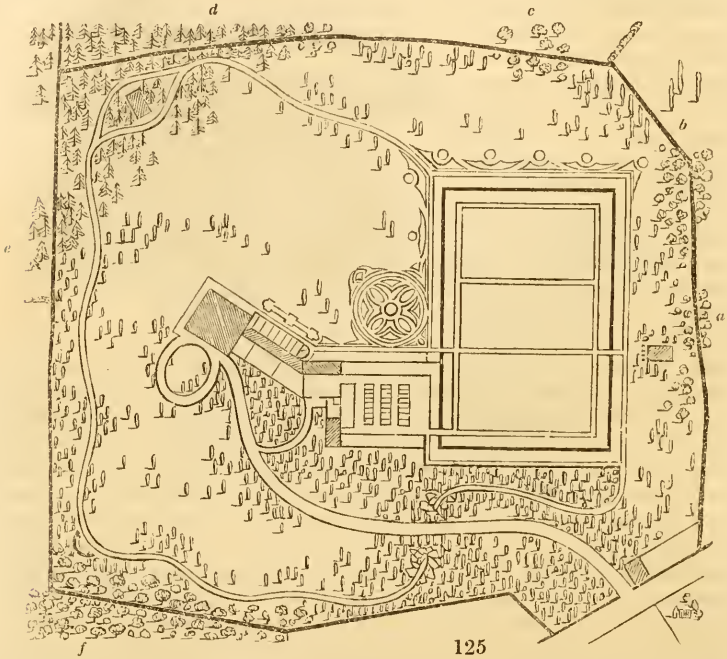
312. *Doric Temple.* — From *r*, in *fig.* 119., p. 207., the walk proceeds along an uniform surface to *s*; where there may be constructed in stone, or brick covered with cement, a Doric temple, or any other building that the proprietor may think desirable. We have mentioned a Doric temple, because that order requires less ornament than any other, and because it admits of the interior being fitted up as a good room. This room might be a billiard-room, or a place for occasionally drinking tea or dining in; or for a children's party, or a dance; or for stationing a band of music in, on extraordinary occasions; or it might be a place for statues, minerals, models, or other objects in which the proprietor was curious. Instead of one large room, there might be two open porticoes, back to back, with a small room between them communicating with both; in which case, the portico of the end next the house would make a good object to be seen from the windows; while from a seat in it would be obtained an excellent view of the conservatory front of the house; and the seat in the other portico, at the back, would command the interesting distant prospects indicated in *figs.* 111. to 114., p. 202, 203.

313. *The walk* is continued from *s*, in *fig.* 119., p. 207., till it joins that round the kitchen-garden at *t*, thus completing the tour of the place. It would have been easy to increase the number of walks, and to conceal them from one another by strips of evergreens in some places, and by raised mounds of turf in others; but we have preferred a comparatively simple style for laying out this place, and have indicated no more walks than what are likely, under common management, to be kept in good order. We have carefully avoided laying down any branch walks from the circumferential walk *p q r s t*, towards the approach, the house, or the flower-garden; not only because we wished to preserve the breadth of effect of the lawn (which we consider, when combined with the concealment of the boundaries by planting, as the best means of giving dignity and extent to a place), but also because we wished to keep an uninterrupted glade of turf from *d* to *x*, by *u*, *v*, and *w*, for those to take exercise in who prefer turf to gravel for walking on; and also as a place where children may learn to ride. (See the open spaces among the trees in the plan *fig.* 125.) We have shown no walk from *y* to *z*, leaving that situation as a fit place for an archery-ground, should one be thought desirable.

314. *The width of all the walks* in the pleasure-ground we propose to be

6 ft.; and we have already given directions for their execution in the best manner. (See p. 53., and Garden Operations.)

315. *Planting.*—The general disposition of the trees and shrubs is exhibited in the plan *fig.* 125.; but it remains for us to indicate the distribution of the



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leading genera. The first point which deserves to be noticed is, that, in order to harmonise the wood within the ring-fence with the trees in the hedgerows or strips beyond it, a few trees should be planted within, of the same kinds as those without. For example, in *fig.* 125., there are elms in two narrow slips beyond the boundary at *a*; and, therefore, there must be a few elms of the same kind scattered among the other trees within. At *b*, there are some Lombardy poplars in the foreground of the exterior scene; and, therefore, two or three of the same species are planted within the boundary. At *c*, there are some sweet chestnuts without; and, consequently, some are planted in the interior. From *d* to *e*, there is an extensive plantation of larches in the exterior scenery; and, therefore, to appropriate this plantation to the newly-formed residence, a good many larches must be planted in the enclosed grounds. At *f*, the exterior plantation is a natural oak wood; and, therefore, *Quércus pedunculàta* and *Q. sessiliflòra* are the prevailing trees in the interior. In some cases, it may not only be desirable to have the same sorts of trees on both sides of the ring-fence, but even to allow portions of the old hedgerows, with the trees in them, to remain in the improved grounds, in order to harmonise what is within with what is without; but this kind of treatment should never be attempted, except where its effect in appropriating the adjoining grounds, as well as in harmonising the general landscape as a whole, will be such as to silence

all objections. All the trees introduced for the purpose of harmonising the interior of the ring-fence with the scenery without, in such a case as that before us, need not exceed 50 or 60; and it will most commonly happen that these may already exist in the condemned hedgerows, or in scattered groups in the fields, as is the case, to a considerable extent, in the plan *fig.* 105., p. 199. The trees in the old hedgerows which it may be thought advisable to save, will only want to be freed from the thorns and other hedge plants (except a few left to group with them), and to have the ground about them levelled down and smoothed. The groups already existing may either be thinned out or added to, as may be found requisite.

316. *It may be here observed, that, in the geometric style of laying out grounds*, the mode of harmonising a residence with the surrounding country was, by the projection into it of a continuation of those avenues and lines of trees which formed part of the residence. This implied the possession of the grounds beyond the park fence; and, when this is the case in the modern style, a few groups without the boundary fence, of the same kind of trees as those within, will effect the same object. This used to be frequently done when a park or parks were surrounded by a common: and Hounslow Heath was formerly clumped, for the sake of the adjoining country seats of Syon, Syon Hill, &c.; as Cobham Common was, to appropriate it, in the eye of exclusive taste, to Claremont and Esher.

317. *All the foreign trees and shrubs* that are to be introduced in order to complete this residence, we intend to plant without fences, and to place at such distances as that they will not require any thinning for at least ten years. The ground on which these are to be planted is supposed to be thoroughly trenched and drained, and even, where necessary, manured, before planting it; so that the trees and shrubs cannot fail to thrive rapidly. During the growth of these trees, we would not allow any grass or weeds to grow within several feet of their stems; but, at the same time, we would not dig the surface, but only hoe it, to destroy the weeds, and fork up the soil to the depth of three or four inches, to render it a conductor of heat and moisture, and to admit air to the fibrous roots which rise up near the surface. We would not, during the same period, prune off any of the side branches, except such as had begun to decay, leaving each tree and shrub to assume its natural shape.

318. *Some will imagine that a plantation in which the trees are at such a distance apart will appear thin;* and this, we allow, will be the case for two or three years at first; but in the fourth year, in consequence of the lateral branches extending themselves, there will be an appearance of richness and massiveness in such a plantation, which plantations as thick as they are generally made never acquire at any age. There is not a greater mistake, nor one more commonly made by practical gardeners, no less than by amateurs, than that of planting thick, with a view to producing a dense mass of foliage that shall not be seen through; and which shall thus become a screen to objects which it is desired to conceal. On the contrary, the true and only mode of producing a dense mass of trees or shrubs is, to plant so thinly as to admit of each tree or shrub becoming clothed with branches from the ground upwards. A plantation of this kind, of only two trees or shrubs in depth (the plants being inserted alternately), will, as soon as their branches touch, form an effectual screen; whereas a plantation of scores of trees in

depth, if the plants are so close together as to draw one another up, and leave the stems without side branches, will be everywhere seen through. Any one may have a proof of this in the strips of plantations along road-sides, made to shut out the public road from gentlemen's parks or pleasure-grounds. At the distance at which the house is placed, the road is concealed from its windows by the heads of the trees; but the spectator riding along the road sees through between their stems without any difficulty. The immense masses of wood in Kensington Gardens being without undergrowth, and never having been thinned, are seen through in every direction, though some of them are a thousand feet in depth; and thus (now that the old yew hedges planted by London and Wise have been cut down) there is not a single space on which the imagination can rest throughout the whole of these extensive grounds. A plantation which is thinly planted has this other great advantage; viz. that, while it cannot be seen through, it can be seen into: its margin, instead of being a line of naked stems, forms a succession of prominences and recesses, each varied more or less in form, and in light and shade; and thus constituting a rich and varied boundary, instead of a meagre and monotonous one. There is scarcely any point which we are more anxious to impress on the minds of our readers, than the necessity of planting trees and shrubs thinly, and of thinning out afterwards, as the trees advance in growth, so as, in general, to keep them clothed from the ground upwards; and always to do so when the object is concealment. As, however, in spite of all that can be said on the subject, many persons have an insurmountable objection to the appearance of a thinly-planted plantation, it may be avoided, by planting trees between those which are to remain, not as nurses, but of a smaller size than the others, so as to fill up the spaces irregularly, as shown in *fig.* 126.; or to plant the permanent trees at once in quincunx, as shown in *fig.* 127., by which means

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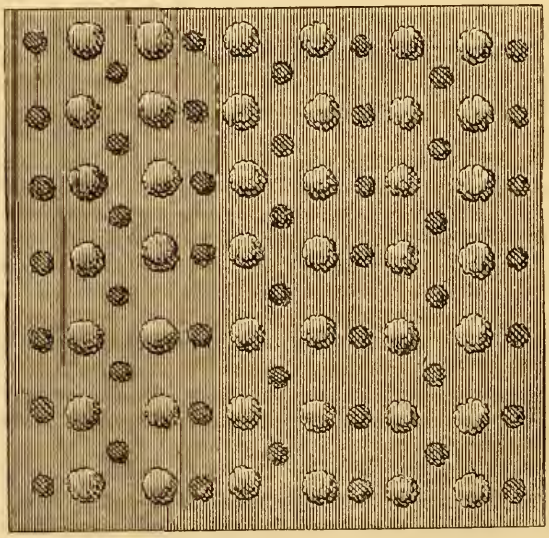

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the appearance of bareness is avoided, and yet the trees are kept at the necessary distance asunder.

319. *With respect to the distribution of the kinds of trees*, setting out from the natural oak wood (*f* in *fig.* 125. in p. 216.), we would introduce, from that point to the entrance lodge, and along both sides of the approach road from the entrance lodge to the house, all the different species and varieties of *Quércus* that would grow freely in the given locality. All the evergreen varieties of *Quércus Cérris* we would make use of over the tunnel, and on both sides of the hollow of which the tunnel walk forms the bottom ; and all the other evergreen oaks, such as *Quércus Ílex*, the cork tree, &c., we would introduce next the house ; partly because these species will not grow so high as to overpower it, and partly to vary the appearance of the domestic offices. As secondary trees, we would introduce along the approach the maples and sycamores, which will contrast well with the oaks with which they are mingled, from the earliness of their foliage and flowers, and from the interesting nature of both in many species. Along with the oaks and acers, we would also plant a few spring-flowering trees, such as the ornamental crab trees, laburnums, and amelanchiers, to add to the gaiety of the scene at that season; some summer-flowering trees, such as the different kinds of horse chestnut, pavias, and robinias, to give beauty during summer; and some of the autumn showy fruit-bearing kinds, such as the large-fruited thorns, *Pỳrus Sórbus*, *Pỳrus hýbrida*, &c. ; so as to produce a rich appearance at that season. We would introduce no shrubs along this approach, except such as the holly, the yew, and the box, which, as they grow up, take the character of low trees. The box trees should be most numerous near the house; and the hollies and yews

over the tunnel and along the banks of the sunk walk. None of these trees and shrubs should be planted nearer to one another, or to the road, than from 10 ft. to 15 ft.; but the common and Turkey oaks may be as much as 20 or 30 feet apart at planting; and no nurse trees whatever ought to be planted along with them, however bleak the situation, for the following reasons, and others already given in. p. 177. The ground being trenched and in good heart, and having neither weeds nor nurses to extract the nourishment from the soil, the trees will grow with extraordinary vigour; and, being exposed to the light, air, and wind, on every side, will become bushy vigorous plants, capable of resisting violent winds, from whatever direction they may come. If drawn up by nurses, they will attain a given height in a shorter period; but, being deprived by the nurse of a great part of the nutriment contained in the soil, and also precluded by the same false friend from enjoying the light and air on the sides, they will be without lateral strength or beauty. Hence, a long period of stagnation occurs in all plantations that have been forced forward by nurses, as soon as these are withdrawn, and the trees are left to be weaned by time and the weather.

320. *In the south-east angle, where accident has placed a number of larches, we would introduce all the species of the pine and fir tribe* that could be admitted in a place of this extent; distributing them along the southern boundary, among a few deciduous trees and shrubs, for the sake of harmony, and also along the eastern boundary, in the same manner, and for the same reason. The trees that are scattered on the lawn we would have chiefly of the low or middling-sized kinds, in order that they might not interfere with the dignity of the house. Among these we would include all the species and varieties of tree thorns, all the crabs, a number of fruit trees of the kinds most ornamental in blossom and in fruit; and, in short, all the trees belonging to the order *Ro*sàceæ. In this way, we would, in this residence of ten acres, include every species and variety of tree and shrub that would endure the open air in the given climate; being careful to admit only a few of such kinds as grow very rapidly, or to a great height; such as some species of poplar and willow, and some varieties of the English elm. Of these very rapid-growing lofty trees, there are about a score which it might, perhaps, be as well to omit altogether in a place like this, of small extent and nearly flat. With respect to the distribution of all the other trees, we have already (p. 176.) laid down the general principles; and it ought to be the business of the landscape-gardener, in a case like the present, to mark the situation of every particular tree and shrub, with its name, on a ground plan; but such a plan (of which a specimen is given in *fig.* 42., in p. 96.) would obviously, in the present case, be much too large for our pages. We cannot, however, too strongly impress it on the mind of the reader, that a working-plan, indicating the precise situation of every tree and shrub, is essential in every small place, where the object is to lay it out to the greatest advantage. Even an experienced landscape-gardener, when laying out a small villa, without such a guide, will be liable to err, by admitting too many of one species or variety, and too few, perhaps, of another; by omitting some altogether, and by planting others in wrong situations. In short, the mature consideration which is required for the landscape-gardener, before he can make a proper working plan for the plantations, is one of the greatest securities, not only to the proprietor, but to the artist himself, for the maintenance of due proportion

among the kinds of trees employed, and for the general taste of the place, as far as trees are concerned. Another advantage of having the situation of every particular tree and shrub marked on the plan, with a corresponding list of their names, is, that no nurseryman or jobbing gardener, who may be employed to execute the planting, can have any pretence for sending in more trees, or trees and shrubs of other sorts, than are indicated in the plan; unless, indeed, as is often the case, the nurseryman or jobbing gardener pretends to improve the plan of the landscape-gardener, and having, by dint of perseverance and talking, got the ear of his employer, the latter is prevailed on, for quiet's sake, to yield to the proposed alterations, and to admit trees and shrubs in such quantities as, in some cases, entirely to destroy the effect which the landscape-gardener intended to produce. It is well known that, in all new plantations, especially in those made in the grounds of small country residences, the plants are now generally put in so thick as almost to touch each other, or at the rate of six or eight thousand plants per acre, even of trees alone; whereas, according to the mode of planting which we recommend, the number per acre, when trees alone are employed, will scarcely ever amount to a thousand; and, when shrubs alone are planted, to not more than between two and three thousand, according to the small or large size which the kinds will attain when fully grown, or the rapidity of their growth when young. Another advantage of this mode of wide planting is, that no thinning will be required for several years afterwards: and every landscape-gardener knows that the effect of the plantations, in nine tenths of newly-made places, is most materially injured by the neglect which generally takes place in thinning. When thinning is neglected after the branches of the trees touch each other, the plants are drawn up as if they were in a nursery. In a few years the more tender kinds are choked; and the coarser kinds, filling up the space thus left, are, in their turn, drawn up; so that, at the end of fifteen or twenty years, the whole presents a mass of naked stems, with diminutive tops; and, if thinning is then had recourse to, the results are hideous, at first, in regard to effect; and, after one or two seasons, from the wind and weather being admitted where they never were before, they are destructive to the trees; which either gradually decay, and at last die standing, or are blown down by the first violent storm of wind.

321.—*The planting of the kitchen-garden* with fruit trees and shrubs may be considered as having been treated of in preceding pages; particularly in p. 75, to which we now refer the reader.

322. *Execution.*—All that we have said hitherto may be considered as only committed to paper in the form of plans, and a report, for the consideration of the proprietor and his family. When these are approved of, the next step is to carry them into execution. This is sometimes done by contract, and sometimes by the proprietor employing his own workmen, under the direction of a competent manager; but, most frequently, partly in one way and partly in the other. The house, offices, lodge, garden walls, and, in general, all that belongs to architecture, may be done by contract; provided a respectable and responsible builder is engaged as the contractor, and not beaten down to the lowest price by competition. The architect who designed the buildings should, of course, have the general inspection of the work as it is going on; and there should be a clause in the agreement between the contractor and the proprietor, that alterations or deviations from the plan may be made according to

separate and specific agreements, without invalidating the general contract entered into at first. Many persons, from good motives, or from a view to economy, employ a carpenter or builder in a small way, whom they wish to encourage, to carry buildings into execution; but there cannot be a greater error. Tradesmen in a small way of business are generally deficient in capital; and, not having a stock of seasoned materials by them, they never can do justice to the work. The charges of such persons are, also, very frequently higher than those of first-rate builders. We could give the history of many houses in the neighbourhood of London, which have cost from 500*l.* to between 30,000*l.* and 40,000*l.*, and have been built in this manner; and for doing which the owners have bitterly repented ever afterwards. We know one gentleman who, on his own judgment, aided by that of his carpenter and bricklayer, laid out upwards of 40,000*l.* in endeavouring to execute a plan for a mansion, received from a first-rate architect; but, in doing this, not thoroughly understanding the construction of a certain dome over a saloon, it has become depressed at one part of the sides, and admits rain at the haunches of the arch. Another gentleman commenced the building of a house on the day-work system, which, if it be ever completed, will cost him three times more than he ever contemplated laying out. B., a wealthy merchant about to retire, employed, to build a country house, a very worthy carpenter, who had married his wife's maid, and also had become a master in a small way: but, whether from not having supplied him regularly with ready money, or from some other cause with which we are unacquainted, certain it is, that unseasoned timber was used in the partitions, roof, and floors; and a very warm summer, that of 1826, happening soon after the house was finished and taken possession of, the whole of the partitions shrank and twisted to such a degree, as to produce large rents in the plaster. The carpenter endeavoured to persuade his employer that the foundations of the walls had given way; but this was too palpable an absurdity to be credited by any one. The rents in the plaster of the partitions were filled up with putty in some places, and with stucco in others; but they are still conspicuous, and must necessarily remain so till the lath and plaster are stripped off, and the stud-work reclothed. The whole of the boarded floors in this house shrank so much, that they were obliged to be twice taken up and relaid; and all the ceilings are cracked. Another merchant in a smaller way, a few years ago, built a house in the country, which cost him 2000*l.*, and employed a very respectable jobbing carpenter that he had confidence in, from having been long accustomed to employ him in petty jobs in town; but confidence is often the result of habit, want of inquiry, or indolence; and this confidence may be deserved by an individual in one point, or in several, and yet not be applicable to all that that individual will, or is even entitled to, undertake. In this case, the London carpenter and joiner, who could procure whatever credit was wanting for the execution of little jobs that he executed from time to time, under the immediate eye, it may be said, of his timber-merchant, could not so readily do this in the case of a more extensive contract for an erection in the country, where he had never before been employed; and where, as his timber-merchant well knew, if his employer did not, he had to purchase his experience, and that necessarily at the expense of others, from having himself nothing to lose. Whatever may have been the cause or causes, chalk lime, instead of stone lime, was employed for the outside walls, and unseasoned timber for the

carpentry of the house, as well as for the joinery. The joints of the brick-work were soon obliged to be raked out, and filled in with tuck and puck; and there is not a single door in the house that has not shrunk and twisted; nor a window-sash that does not rattle in the frames with the slightest breeze. It is true there is no want of ventilation in this house, and there is not a single chimney that does not draw well; but the causes which produce these effects render the rooms so cold in winter, that they cannot be thoroughly heated by the largest fires. In all the larger windows, the panes have been cracked by the twisting of the sash-bars; and it is needless to say that the partitions and the floors are warped and rent, as in the preceding case. To employ first-rate workmen, and supply them with ready money for purchasing all the materials, is a mode often resorted to, under the idea of economy; but, however excellent and honest the workmen employed may be, and however well they may be acquainted with the various details of house-building, they must necessarily be without the experience of the master-builder, who has built several houses of different sizes; and thus be liable to be wrong in judging of what will suit. The persons selling the materials will also naturally keep their best articles for their best customers; and thus the purchaser of small quantities will not be able to get his materials either so good or so cheap. We acknowledge that it seems hard to lay down rules which are calculated to prevent the mechanic or tradesman who has no capital from ever bettering his condition; but we cannot help it. We merely state facts, and the opinions which we have formed on them. In another house, built under somewhat similar circumstances, in addition to these evils, more or less aggravated or alleviated, in consequence of employing an ignorant plumber, all the lead on the roof of the house, which was too thin, and was, consequently, raised, cracked, and twisted by the heat of the sun, was obliged to be removed, and replaced by lead of a thicker quality at the end of the third summer; and all the water-closets were obliged to be altered. One of these, a self-acting patent one, which cost double the usual expense, was rendered useless by the plumber's attempting to improve its construction, while setting it up. On inquiry into the history of this plumber, it was found that he had never been regularly brought up to the business, but that, having failed in a totally different trade, in another part of London, he had set up as a plumber on the faith of public ignorance. In this manner many persons about the metropolis set up as petty masters in businesses which they have never been regularly taught. Every one knows that the occupations of coal-merchant, wine-merchant, publican, and coffee-house-keeper, are universal resources to persons not regularly brought up to any trade; but those of petty builders, plumbers, glaziers, bricklayers, upholsterers, and a great variety of other trades and professions, are also the resources of persons who have been unsuccessful in their original pursuits. To these examples of bungled houses, we could add hundreds of other cases, some of which would hardly be credited by our readers, which have come under our observation during a period of nearly forty years, all which time our attention has been constantly directed to the subjects of building, planting, and gardening. We shall only add, that our decided opinion is, that, whether a shed or a mansion is to be erected, the cheapest mode, as well as the best, is to employ a first-rate builder.

323. *The principal planting about the place*, including the trenching and levelling of the ground, the formation of the approach and walks, and also

the laying out of the kitchen-garden, may be executed by contract, by a respectable nurseryman. In general, however, whether in small or large places, the work will be more carefully done, and not at much more expense, by employing a first-rate head gardener, who is to be continued afterwards, to manage the garden; and allowing him to execute the work, partly by letting it out in small jobs, and partly by daywork. Trenching, digging drains, excavating for roads or walks, and even smoothing and levelling, may all be done by the job; and, wherever work can be thus executed, it is by far the cheapest and best mode for the proprietor, and the most agreeable to the workmen. Much, however, in this case, depends on the knowledge and experience of the head gardener in letting out the work; and his attention in seeing it properly executed.

324. *Whether the buildings or the plantations ought to be commenced first*, is a question which admits of being variously answered, according to circumstances. Where the place is extensive, and much planting, wholly detached from buildings, is required, all the plantations may be commenced two or three years before the buildings; but, in the case of a place like that before us, where the principal part of the planting is connected with the house and offices, or the kitchen-garden, or borders the approach road, all the buildings ought to be completed, at least exteriorly, before even the ground is levelled or trenched for planting: even the cartage of materials to the house along the approach road will endanger young trees bordering on it; and, therefore, it is much better not to plant them till the road is made.

325. *The first actual step in executing the buildings, more particularly the house and offices, is to erect a temporary shed for the use of the carpenter and other workmen*, both as a place for working in, and to enable them to lock up their tools, &c.; the next is to mark out the foundations, and to have them excavated; and the third, which ought to go on at the same time as the first and second, is the procuring and laying down materials. It may be worthy of notice, that the first and the last workman connected with erecting any building is the carpenter. He is required to construct skeleton squares or triangles, before the ground is broken for the foundations, or a single brick or stone can be laid, in order that the angles of the foundations may be truly correct; and, as the building proceeds, he is employed in preparing and placing the flooring, roofing, doors, windows, and interior fittings, to the last step in joinery, viz., that of putting the finger-plates on the doors, after the painting and papering have been finished. Hence it is that carpenters (including under this term joiners) know more about the detail of executing buildings than any other person connected with them, not even excepting the architect; and hence, also, the carpenter, other circumstances being the same, will invariably be found the most intelligent mechanic on an estate, as connected with construction; as the gardener will generally be found the most intelligent, as connected with cultivation. If the proprietor of a country residence, therefore, find himself reduced so as to be only able to keep two men to look after it, these two should be the carpenter and the gardener. Remarks of this kind may, perhaps, be considered by some out of place; but, this book being intended for those who have little or no previous knowledge of the subjects of which it treats, we think them likely to be useful; and it is consistent with our plan to introduce them incidentally rather than systematically.

326. *The walks, the situation of the trees, &c., are easily marked out on the ground, by driving stakes or pins in the direction of the lines representing them in the plan.*—This is rendered easy by the squares already marked out and indicated on the ground, and by stakes, with numbers on them, having been driven in at the angles formed by the intersecting lines of the squares. If these squares should not have been formed, or if the stakes indicating them should have been taken up, or partly misplaced, then the squares ought to be laid out afresh, remembering to keep the imaginary lines which form their sides correctly north and south, and east and west.

SECTION II.

DESIGNS FOR COUNTRY VILLAS; WITH THEIR PLANTING, CULTURE, AND RENOVATION.

327. *Counrty villas* may be divided into two classes, viz. small country villas, which have no farm attached; and large country villas, which have a small farm attached to them, or, at any rate, a paddock for feeding a cow or a couple of horses. Of the first kind we shall give three or four imaginary designs by Mr. Rutger, many years land-steward to Sir John St. Aubyn; and one or two by Mr. Lamb, a well-known architect: after which we shall give one or two designs of places actually in existence. Of the larger villas we shall give very few examples which have not been actually executed.

SUBSECTION I.—*Small Country Villas.*

328. *Small country villas* which have no fields attached to them, have seldom very extensive pleasure-grounds; and therefore the principal difference between them consists in the various ways that may be adopted of laying out their flower-gardens; for all kitchen-gardens must be very nearly alike, and the shrubbery in a small place is nearly always only a belt. A very few designs will, therefore, be sufficient to show the general style of villas of this kind.

DESIGN XV.—*To lay out a piece of ground, of a regular form, and two acres in extent, as a small country villa.*

329. *Ground plan.*—Though this villa, *figs.* 128. and 129., is bounded by straight lines, and, being rectangular, might form a portion of ground along any road, yet the manner in which the buildings are disposed prevents it from being considered as belonging to the class of suburban villas. The design is by Mr. Rutger, and, like all that gentleman's ground plans, is remarkable for convenience of arrangement.

"The ornamental part of this design," Mr. Rutger observes, "may be considered as in a mixed style, partly geometrical and partly irregular. The approach is by a lodge entrance; and it passes on from the entrance door of the house to the stable-yard, and out again into the public road. On the left of the house are a conservatory and its fireplace, &c., hidden at the back by a shrubbery. The wing on the right, also hidden by shrubs, is for the kitchen offices. There are two private entrances from the main road, that on the left

(*a*) for the family, and that on the right (*c*) for the domestics, with a private walk to the latter from the kitchen offices. On the right of these offices is a poultry-court (*e*), with entrances for the family at *l*, and for the domestics at *q*, adjoining to which are the laundry and drying-ground (*f*), where a brew-house or cider-house may also be constructed if required. The forcing garden and reserve ground lie at the back of the stables, and may be entered from the stable-yard, for the convenience of dung, &c., as well as from the kitchen-garden and the gardener's house. The erections at the north of the reserve ground are, a potting-shed, a cellar for mushrooms, &c., with fruit-rooms over,

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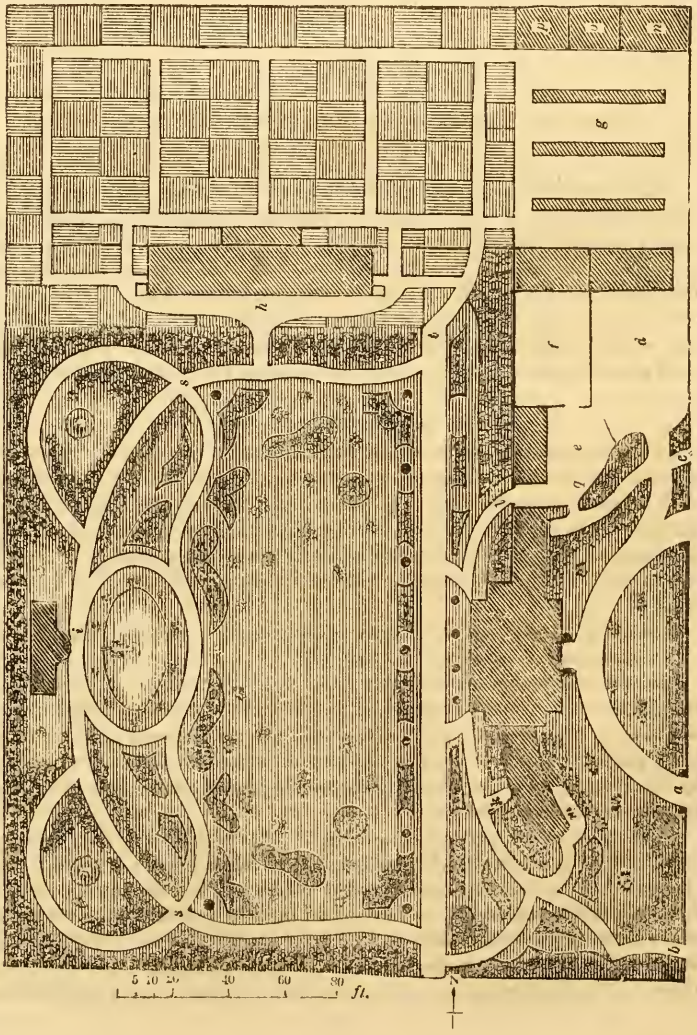

and the gardener's house. The range for two forcing-houses, with a greenhouse between, is placed against the wall on the south side of the kitchen-garden, and approached in front by a walk from the lawn or pleasure-ground. On the western front of the house is a colonnade, in front of which a terrace walk extends on each side of the extremity of the lawn; on the verge of which are small clumps and vases, or other ornamental devices, in alternate succession. On the farther side of the lawn are a pond with a fountain, and a summer-house or billiard-room behind it. The small circles in the shrubbery on each side of the summer-house, at *r r*, are intended for statues, or some kind of ornamental structure." See the isometrical view, *fig.* 129.

Mr. Rutger continues: "I beg here to observe, that, as a general principle, I would not admit of walks crossing each other at right angles, or nearly so, where it can possibly be avoided; and that, where it cannot, I should conceal the angles formed by their intersections with shrubs, planted as closely as possible to the walks. In the ground plan (*fig.* 128.), it will be perceived that, on three sides or corners of the walks which cross each other at *s s*, this principle is attended to; and that on the fourth side I have indicated a vase, or something of that kind, for the sake of variety, though I think that shrubs would be better."

a, Carriage entrance from the Brighton road.
b, Private foot entrance for the family.
c, Private foot entrance for the domestics.
d, Stable-court, with coachman's lodgings over the harness-room; a three-stalled stable, double coach-house, &c.
e, Poultry-yard, with a private entrance for the master and mistress at *l*, and an entrance for domestics at *q*.
f, Laundry and drying-ground, in which there may be a brewhouse and a cider-mill, if thought requisite.
g, Forcing and reserve ground, the range of building on the north side including the gardener's house, mushroom-shed, and tool-house.
h, Peach-house and vinery, having a greenhouse between them, and behind the kitchen-garden, in which are the sheds and furnaces.
i, Summer-house. *k*, Conservatory.
l, The family's private entrance to the poultry-yard; and through it to the laundry (*f*), or to the stable-court (*d*).
m, Furnace-shed and potting shed for the conservatory; behind which is a water-closet; the whole concealed from the entrance approach by evergreens. The water-closet is entered by a concealed door in the back wall of the conservatory, and it has also another door on the outside; so that no person need come out by the same door by which he went in.
n, Gardener's house, with an entrance from the public road, and another from the reserve-ground.
o, Mushroom-cellar, with fruit-room over it. In this cellar may also be forced rhubarb, chicory, &c.
p, Tool-house and poultry-shed.
The ice is supposed to be kept in one of the cellars under the right wing of the house.

330. *Remarks.*—There is scarcely a single point in this design that we would wish to alter, with the exception of the termination of the terrace walk at *t* in *fig.* 128. We would have this walk terminate either in an alcove, and give up altogether the entrance in that quarter to the kitchen-garden; or we would carry it on to the kitchen-garden wall, and terminate it there in an archway, which should form an entrance to the kitchen-garden. The oppo-

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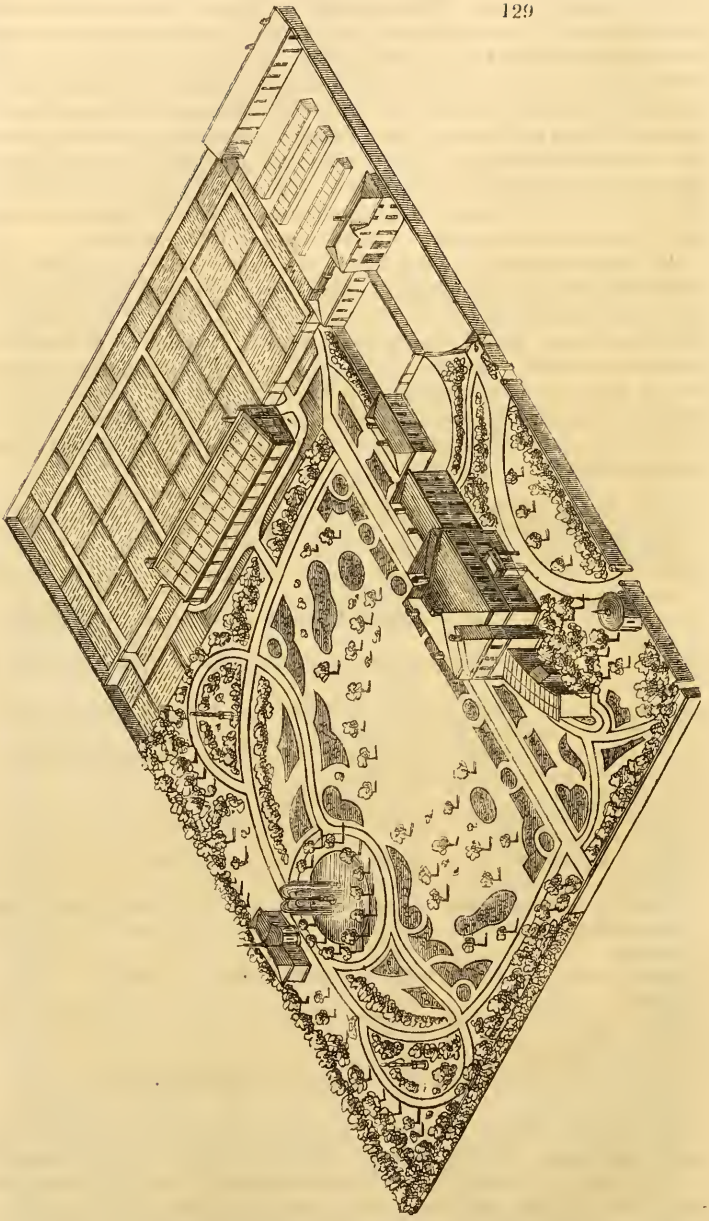
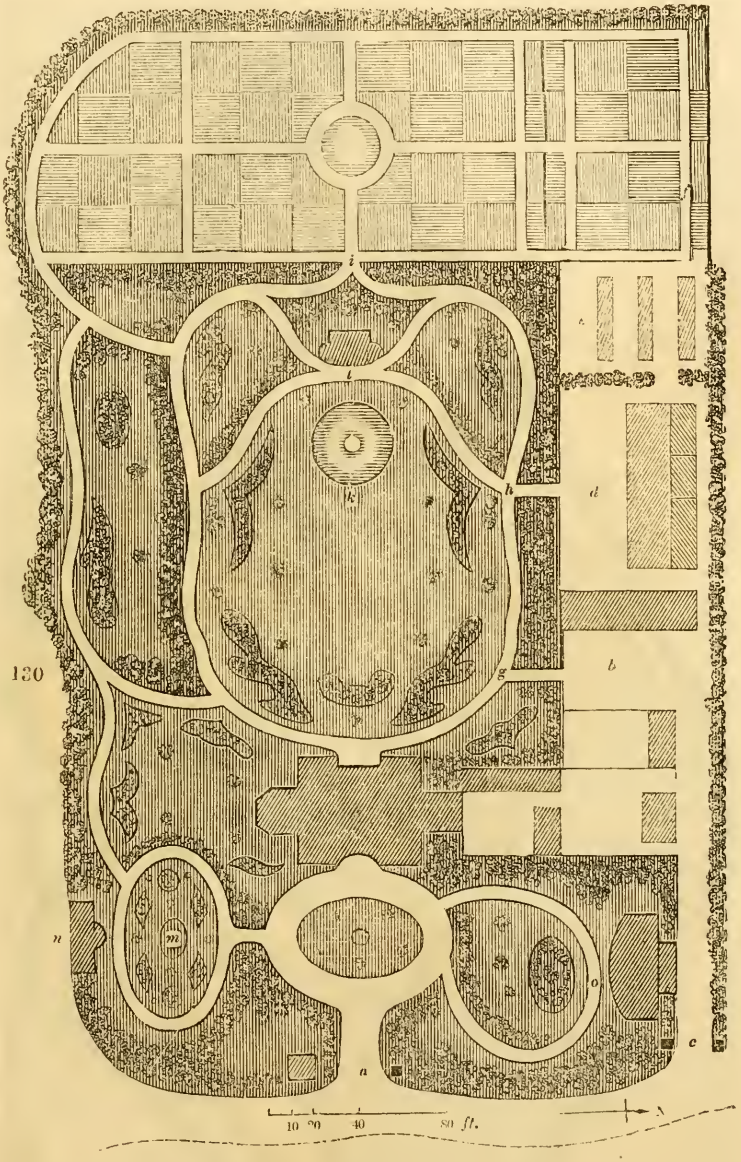
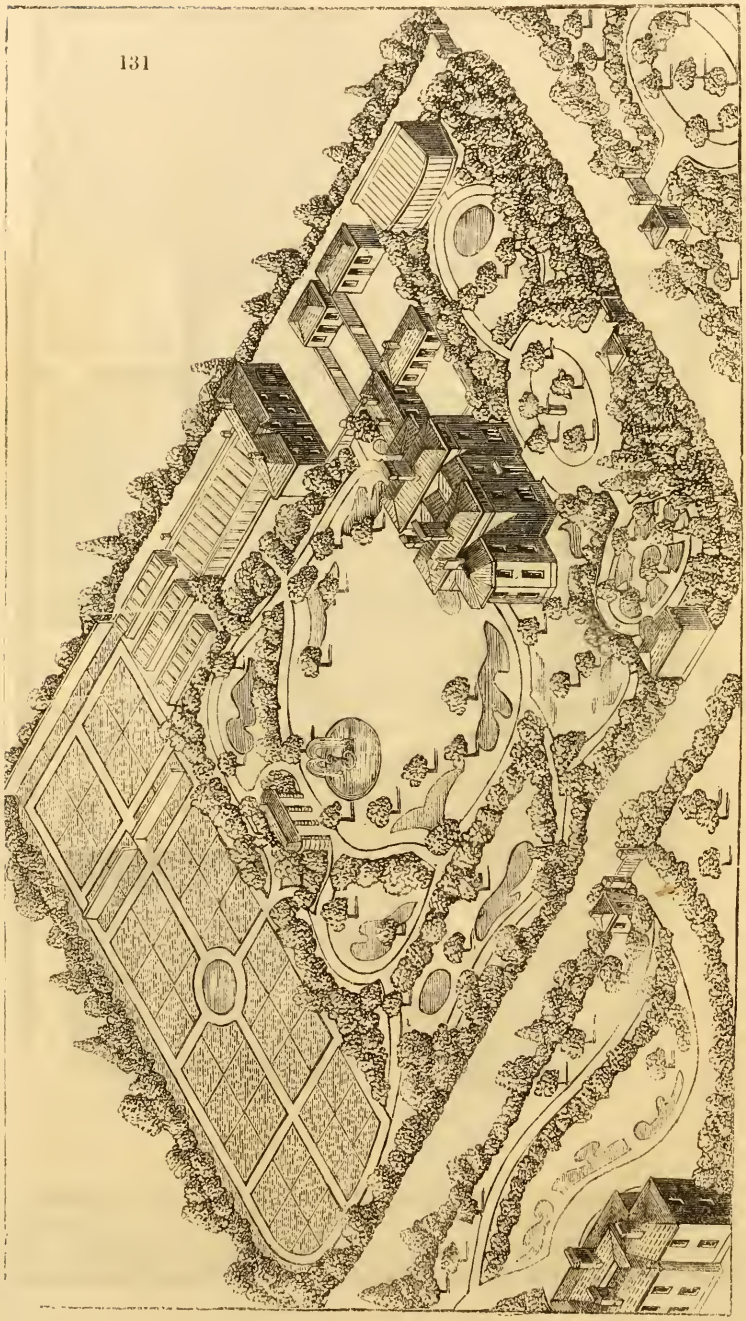


site end of the terrace walk, which, in the ground plan, is concealed by trees, is intended, we presume, to terminate in a covered seat of some kind, that



has an architectural character harmonising with the house and conservatory. Wherever straight walks are used in laying out grounds, one of the main points to be attended to respecting them is, their finish, or terminations; as, when these are not of a decided description, there is a want of that character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of art which is essential to this style of design. This rule is founded on the principle of a sufficient reason; for why should a walk be continued along in a straight line, unless it be for the purpose of arriving at some point or object that it is desirable to go and see? The windings of walks also depend, or ought to depend, on the same principle, viz. the recurrence of obstacles, either natural or artificial, which prevent them from being made straight. We go along a straight walk, in order to come at the object which is at the end of it; and along a winding one, for the sake of observing the objects that gradually develope themselves as one turn succeeds another. The straight walk approaches its object in a direct and grand manner; the winding one in a manner which is varied and graceful.

Design XVI.—*A villa of three acres in extent, with a nearly regular outline.*

331. *Ground Plan.*—In this design (*figs.* 130. and 131.), Mr. Rutger informs us, "the house is approached by a lodge entrance (*a*), and the area in front presents an oval: the carriage road to the stables (*b*) is from the road at the north-east corner (*c*). At the north end of the house are the yards and buildings for the different offices, to be appropriated as it may be found expedient; all of which may be entered from the road *c*, which leads from the main road to the stables. On the west of the stables is a range of forcing-houses (*d*), with potting-shed, &c., and gardener's room. At the back, and farther on, is the frame-ground (*e*), from which the kitchen-garden (*f*) is entered; where there is a pond, and also a cross wall, to give more room for fruit trees. It will be observed that there is access to all these departments, from the stable-yard (*b*), for the convenience of carting in dung, &c.; and, also, that the offices and yards appertaining to them are all shut out of view from the house by shrubs. On turning to the right from the west front of the house, a walk (*g*) is opened to the stable-yard; and, farther on, a walk (*h*) leads into the forcing-house department (*d*). The principal entrance to the kitchen-garden (*i*) is in the centre, at the west end of the shrubbery. There is a pond with a fountain (*k*) on the lawn, and, opposite to it, a summer-house (*l*). On the south there is a side walk, which leads to a small flower-garden (*m*), enclosed by a shrubbery, with a reading-room (*n*); and, on the north, nearly opposite, is a conservatory (*o*), and an oval clump at its front on the lawn, with a walk to communicate from the carriage entrance."

Design XVII.—*For laying out a villa of three acres and a half, on a level surface, with a first-rate house.*

332. *Ground plan.*—For this design (*figs.* 132. and 133.) we are also indebted to Mr. Rutger. "The house is approached from the south-west by a lodge entrance (*a*), and, as the road indicates, the carriage returns to the stables on the north-east of the premises. The coach-house (*b*), in this design, is detached from the stables, at the back of which is a yard (*c*), which may be made available for the dung, and, also, for compost for the frame and forcing departments. In the frame-ground (*d*), adjoining to the stable-yard, is a row of sheds, for the gardener's room and other purposes. The forcing-houses (*e*) are at the back of the frames, separated by a yew hedge (*f*), which also divides the frame-ground from the kitchen-garden (*g*), which is walled on three sides, with an irregular slip (*h*) round as far as the walls and forcing-houses extend. The offices (*i*) are placed at the south end of the house, and hidden by a shrubbery, through which there are a back entrance (*k*), and also a walk (*l*) to communicate with the out-door offices, such as the laundry (*m*),

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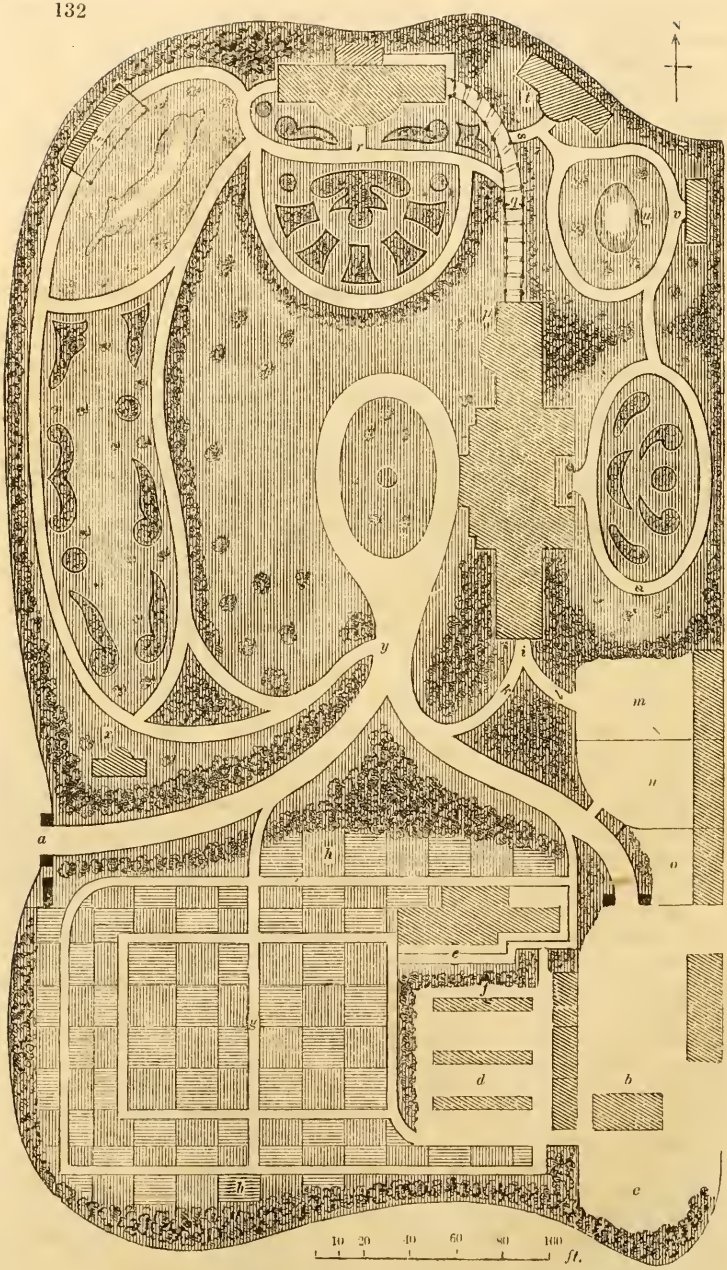

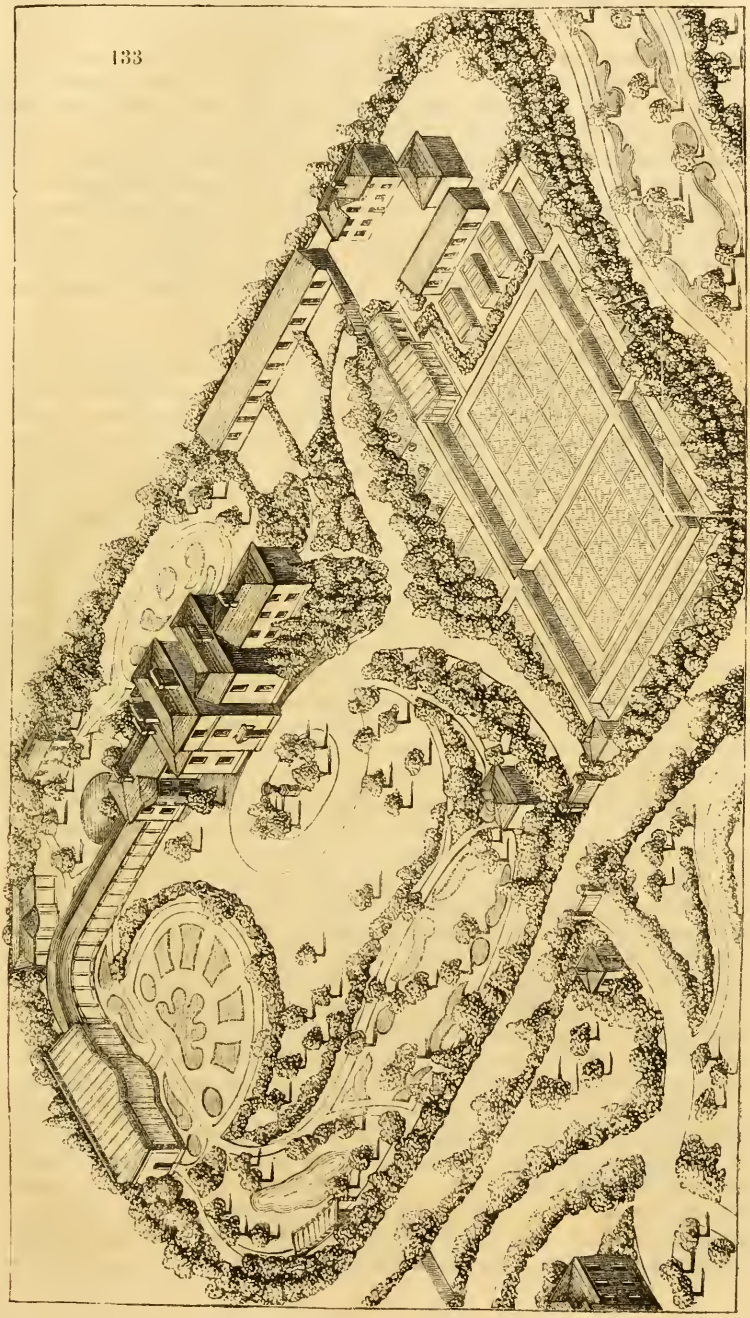
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poultry-court (*n*), brewhouse, &c. (*o*), of all of which the view is supposed to be hidden from the house by the shrubs which form the boundary of the oval area at the east front. The north end of the building (*p*) is supposed to be the drawing-room, from which a covered way (*q*) leads to a conservatory (*r*), in front of which is a flower garden, which may be entered either from the covered way, or from the conservatory. From the covered way, on the right, a walk (*s*) leads out to an aviary (*t*), and to a compartment for fancy fowls, ducks, &c. (*u*), in which there is a building (*v*) to be appropriated according to the wishes of the proprietor. On leaving the flower-garden, and turning to the right, the walk leads through a covered way (*w*), wherein is a seat, and opposite to it a piece of water. Proceeding onward, a summer-house (*x*) is approached, situated so as to have a view of the whole length of the narrow lawn at its front."

333. *The conservatory.*—The ingenious manner in which the conservatory is made to front the south, and is, at the same time, connected with the house by the covered way, is worthy of notice. This covered way might be greatly increased in interest, if the roof were glazed, and moveable sashes were adapted to the spaces between the supports in front. These sashes might be taken out, and those of the roof taken off, in the summer time, and used for covering beds of cucumbers and melons. A part of the floor of this covered way, next the back wall, should then be formed into a bed for plants, and might contain a very fine assemblage of such of the Australian and Chinese or Japan shrubs as bloom during winter or in early spring, or Cape heaths. The pathway need not, in such a narrow building, be above 3 ft. broad; and it should be carried along the front of the structure, in order that the eye may look on the best side of the plants, which is always the side next the light. Against each support, in front, a creeper may be planted, and trained up it and across the rafter to the back wall. A long, narrow, and not very high, conservatory of this kind is, doubtless, less grand and imposing than one of larger dimensions, a view down the middle of which is seen from one of the living-rooms; but it is calculated to afford much more enjoyment to the lover of plants, as well as much more variety to the general observer; because each plant is, as it were, passed before him in succession. The difference in the enjoyment produced by a long, narrow, and comparatively low, winding green-house or conservatory, like the covered way shown in the isometrical view (*fig.* 133.), and that produced by a rectangular one of large dimensions, such as those commonly appended to first-rate mansions, does not appear to us to be at all understood; or, at least, not to be sufficiently impressed on the minds of proprietors of villa residences. The object with such persons, when they propose to construct a green-house or conservatory, is to have one which shall be considered large; and, hence, the fear of the expense often deters them from enjoying this innocent luxury. Now, a large conservatory, if it is architectural, forms a very handsome appendage to a house; but, if it is not architectural, it injures the effect of the house, by its resemblance to the common shed-like forcing-houses of the kitchen-garden or of a nursery. This last kind of conservatory or green-house attached to a house is, therefore, a deformity rather than a beauty; while the other, though it is a grand architectural appendage, is only adapted to first-rate mansions. On the other hand, a long narrow conservatory, such as we have described, is equally adapted to the cottage and to the mansion; and

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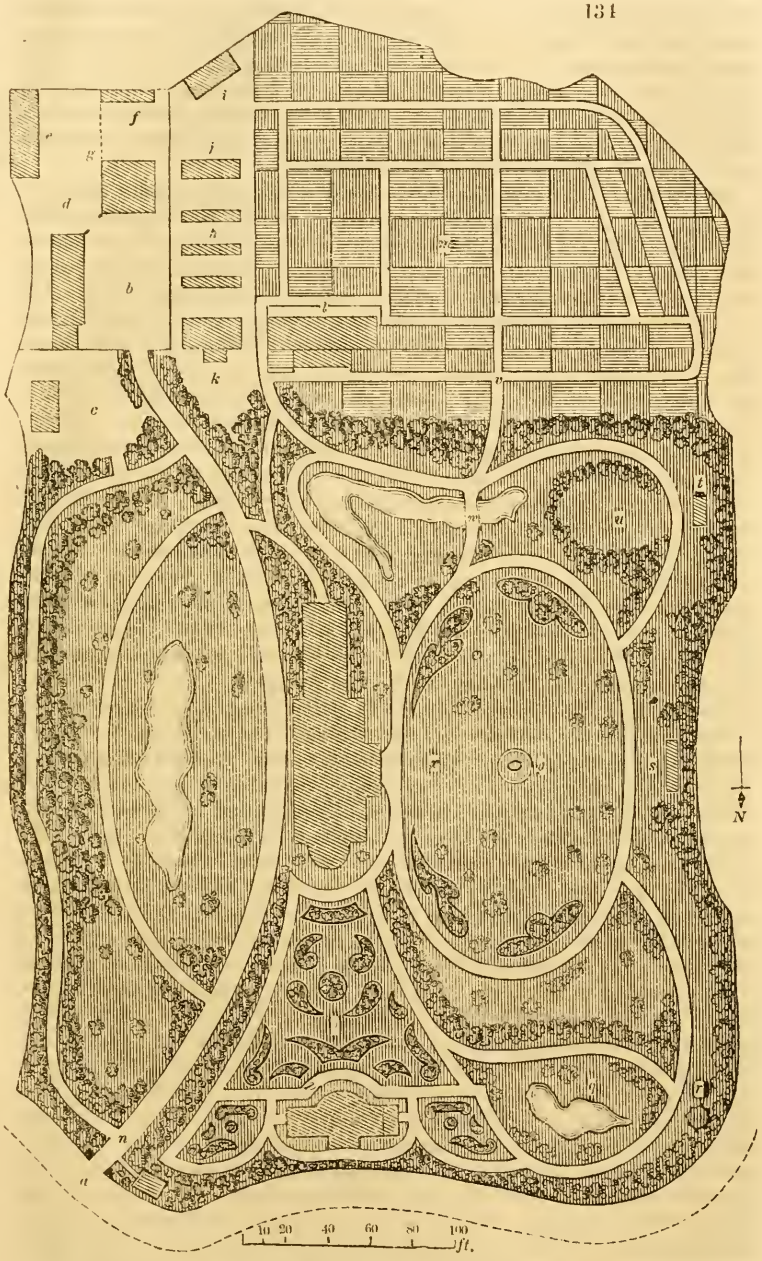

it costs much less in proportion to the space enclosed than the large structure; while the plants, being nearer to the light, arrive at greater perfection; and, being nearer to the eye of the spectator, are seen to greater advantage. Another advantage of a long narrow conservatory is, that it does not interfere with the windows of the house; because, being narrow, it requires but a small portion of wall for it to abut against, and may proceed from any door or living-room window that may be convenient.

334. *Remarks.*—The apparent extent of this place might be greatly increased by connecting the walk at *y* with that at *z* by a tunnel; but the practicability and expediency of this will depend very much on the dryness of the subsoil. The extent of the walks might, also, be considerably increased, by conducting one from *x*, over or under the approach road near the entrance, and leading it round the kitchen-garden on a glade of turf properly furnished with trees and shrubs, and so in a tunnel, under the road to the offices, to *z*. Of course, this arrangement would diminish the extent, and vary the position, of the kitchen-garden; and it would require such an arrangement to be made at *i*, *k*, and *l*, as not to have a tunnel longer than three or four yards. All this, and many other arrangements of the kind, might be effected with the greatest ease, and produce a very striking result, provided the subsoil were thoroughly dry, and a little extra expense not objected to. In short, it may be held as an axiom, in laying out villa gardens of from a quarter of an acre to twenty acres and upwards, that their apparent extent to the stranger walking through them may be doubled or trebled by judicious tunneling in some places, and carrying the road or walk over bridges, through a ruin or rock-work, or under an arcade or trellis-work, in others. Improvements of this kind cannot be shown with much effect on paper; but in reality, when judiciously executed, they have the effect of enchantment.

DESIGN XVIII.—*For laying out a villa of four acres, with a regular outline.*

335. *Ground plan.*—This villa (*figs.* 134. and 135.) is also by Mr. Rutger. "The lodge entrance (*a*) is at the north-east corner: the road forms a sweep to the house, and passes on to the stables, at the south-east corner. The stable-yard (*b*) contains the stables, coach-house, and brewhouse; at the north of which is placed the laundry, with its drying-yard (*c*). At the back of the stable-court is a yard, in which are a place for the dung (*d*), a piggery (*e*), and a mushroom-shed (*f*). The portion of the yard which contains the mushroom-shed may be parted off at pleasure in a line with the coach-house, as indicated by the dotted line *g*, and may, at the same time, form a place for compost, or for mixing and turning dung. In the yard adjoining, south of the frame-ground (*h*), is the gardener's room (*i*), which may be available, also, if made large enough, for a fruit, seed, and onion-room. The melon-ground (*h*) is supposed to contain three ranges of frames and a pit (*j*), and also a forcing-house (*k*) at the back. There is another forcing-house in the kitchen-garden, contiguous to the frame-ground, at *l*. The kitchen-garden (*m*) has a wall all round it, and slips on both sides and at one end. The walk at *n*, on entering the premises, immediately on the left of the lodge entrance, is intended for the domestics, and communicates with the laundry and stables, and it is also meant as a back entrance to the house. On the lawn of the entrance front is a piece of water, with a walk round, communicating at each end with the coach road. Proceeding from the western front to the right, you may enter the flower-garden (*o*), in which there is a conservatory (*p*);

or, by leaving the flower-garden on the right, you are led on by different walks, as represented in the figure. At the north-west corner are a piece of water (*q*) and a summer-house (*r*). In the centre, on the west, is a seat (*s*); and at the south-west angle of the pleasure-ground is another structure (*t*), in front of which there is an oval (*u*), intended either for a small bowling-green, or for any other purpose. Proceeding onwards, you come to the principal entrance to the kitchen-garden on the right (*v*); and on the left is a bridge (*w*), leading over a piece of water to the oval (*x*) at the western front, in the centre of which is a circle (*y*), for a fountain, statue, or large vase. In a place of this extent, a good collection of choice trees and shrubs might be introduced in such a way as that the whole might almost be considered as an arboretum; and the line of shrubs, which is placed to hide the kitchen-garden, might be converted into an American border."

336. *Remarks applicable to the preceding designs.*—The surface of the ground, in all these designs, is supposed to be even, and for the most part flat; in consequence of which, there can be no difficulty in laying out the roads and walks in any direction which the designer may think suitable. It may be asked, then, by what leading circumstance the designer is influenced in tracing the lines for the roads and walks, as shown in these plans? Is it arbitrary, depending on his particular taste; or is it guided by some circumstance in the situation, the wants of the proprietor, and the means which he places at the disposal of the artist? To these questions we answer, that all the main features, in laying out a place, are indicated by certain circumstances, either peculiar to the situation, or peculiar to the wants and means of the intended occupier. For example, the situation of the entrance lodge is determined by the point or side of the estate on which it touches the public road. If the road touches on only one point, there is, of course, no choice; but, if it borders the estate on one or more sides, then a point is chosen for the entrance which it is considered may be most convenient for use, and may show the place off to visiters entering by it to the greatest advantage. The distance at which the house is placed from the public road, and its position relatively to the boundary fence on every side, depend chiefly, where the surface is even, on the extent of the ground, but partly also on its form; whether it extends in length or breadth, and whether the boundary is very irregular, or tolerably regular. Something, also, depends on the style in which the occupant intends to live. Where there are no horses or carriages, and but few servants are kept, labour is saved by having the house near the road; but, even in this case, if the family had but few visiters, and were devoted to their garden, placing the house in the interior of the property would be more suitable. The situation of the house is also influenced by the room which requires to be found for the offices and kitchen-garden; and, also, by the proper aspect which the fronts of the house ought to have; that for the garden or living-room front being generally the south-east or south-west. The number and direction of the walks are in a great measure determined by the outline of the ground. In all small places, it is desirable to have as long a walk as can be got, for the sake of recreation; and the longest walk is necessarily that which follows the boundary. Hence, almost every place, whether large or small, has a walk round it. The walks in the interior depend on the extent of the place. In the smallest residence, one is required from the house to the kitchen-garden; and a walk round the outside of the latter is

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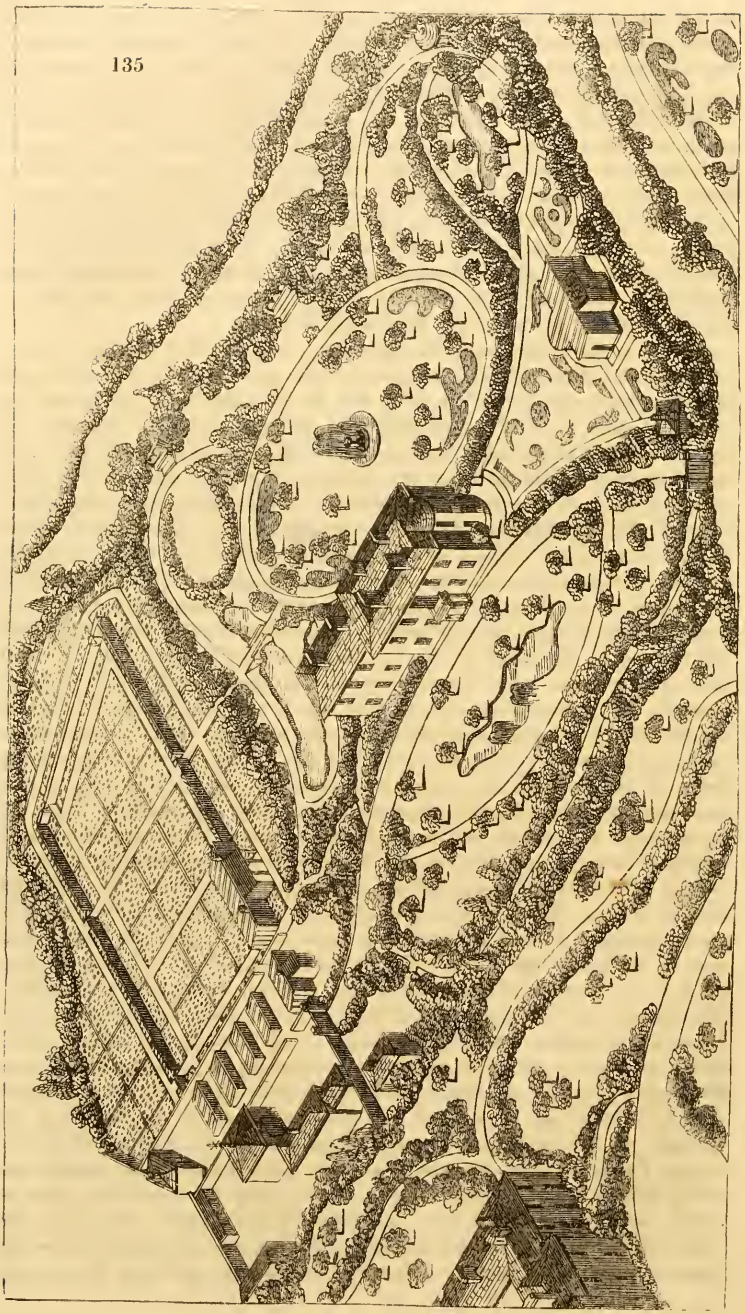

found convenient for culture, as well as an agreeable place for recreation. Any other walks than one round the boundary, and another round the kitchen-garden, and connected with the out-door offices, must depend on circumstances peculiar to the situation or the occupier. If there are great natural inequalities of surface, a piece of natural rock or natural water, a walk may be conducted so as to show them to advantage; and, if the occupier is wealthy, and disposed to make the most of the situation, he may create hills, hollows, and other inequalities, form rocks and water, and erect buildings at pleasure; to all which objects walks are either required, or may be legitimately introduced.

337. *The plantations necessary* to form a small residence are, in the same manner, guided by reason in all that relates to general effect; and in detail they depend on the taste and means of the intended occupier. Trees are wanted throughout the grounds to connect one object with another; to unite the house with the offices, and partially to conceal the latter; and to unite the place as a whole with other places in the neighbourhood, or with the adjoining scenery. Trees are also required for shade, and for shelter. Shrubs are, in this sense, to be considered as included under trees. They are wanted for thickening masses and screens so that they may not be seen through; and also for sheltering, and, in some cases, shading, herbaceous plants; and, in the form of hedges, they serve for subdividing compartments. So far the use of trees and shrubs is guided by common sense; the next point is, to determine the choice of species and varieties, which is in part determined by common sense, and in part by the particular taste and means of the occupier. It is natural that the finer or more choice kinds of trees and shrubs should be placed near the house, as the centre of art and refinement; and, also, that evergreens should abound there, as being in our climate indicative of culture and taste. In a small place, trees of small size will naturally be preferred to those which soon attain a very large size, such as some of the elms and poplars. Trees with showy flowers or fruit will be selected, in preference to those which have the flowers and fruit inconspicuous. In exposed situations, hardy trees which endure the blast will be preferred to such as are more tender; and, where objects are to be concealed, evergreens will always be preferred to trees and shrubs which are deciduous. These general principles are applicable to all small places. The further pursuance of the subject belongs to the particular taste and means of the individual. One person may choose to render his place a complete arboretum; another may limit himself to a few species of the more showy trees and shrubs; a third may prefer large rapid-growing trees, that he may soon have the pleasure of pruning or thinning them for profit; while a fourth may give a preference to fruit-trees, and so on. There is, in short, no end to the variations that may be introduced in the planting of trees and shrubs, independently altogether of those beauties which all trees and shrubs produce, viz. individual expression and character as pictorial objects, variety and intricacy in combination, and botanical interest.

338. *The pieces of water*, in all these designs, are liable to objections; but these are partly owing to the particular manner in which the ground plans are drawn, and their very small scale. If these pieces of water and the adjoining scenery are considered as being in the picturesque style, then the pieces of water would require a considerable addition of trees and shrubs to

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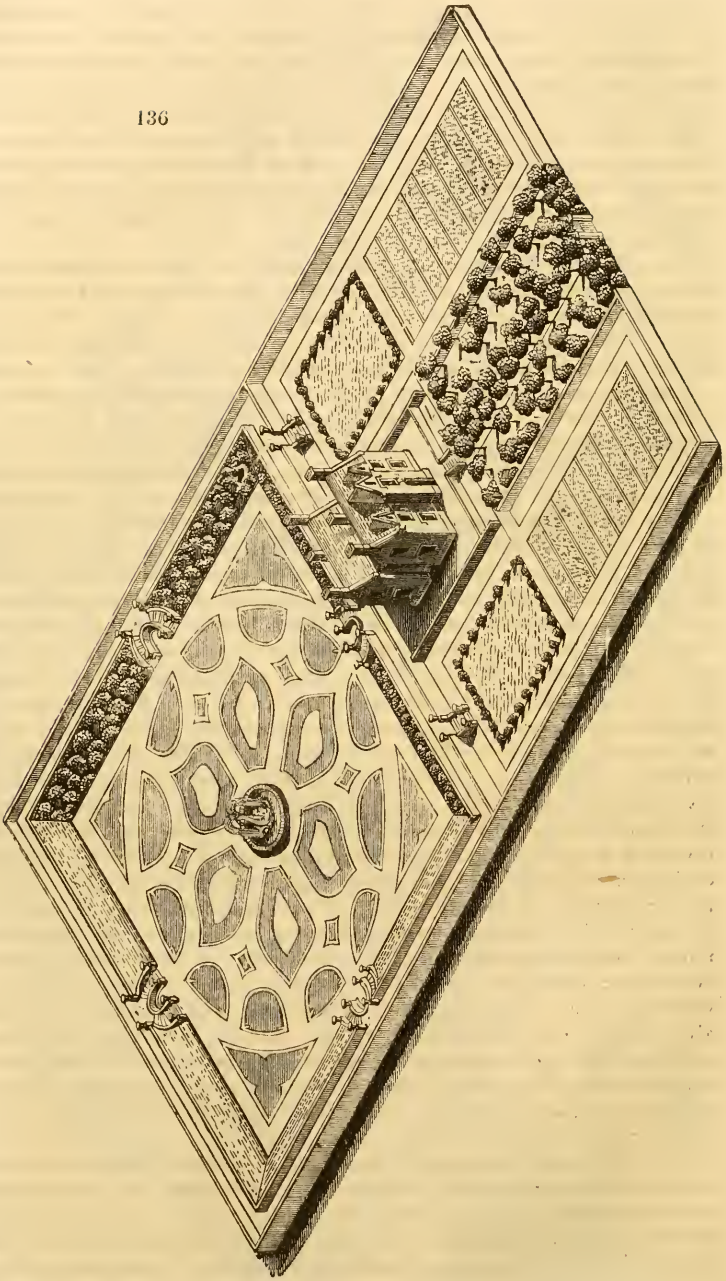

conceal and vary their boundaries, to connect them with the general scenery, and to disguise their poverty of shape. If, on the other hand, they are considered as gardenesque pieces of water, to be planted in the gardenesque manner, then the shapes of the ponds or miniature lakes ought to be handsomer in themselves than they now are, so as to produce an agreeable effect, even without any trees and shrubs whatever as accompaniments. At the same time we do not say that gardenesque pieces of water ought to be without trees and shrubs; on the contrary, they require this addition to display them to advantage, no less than picturesque pieces of water; all the difference being, that in the former case they must be added in a gardenesque manner. The pieces of water in these designs are not sufficiently handsome to be admired as gardenesque, and not sufficiently disguised by trees and shrubs to be decidedly picturesque; but this, as we have before observed, arises in a great measure from the smallness of the scale, and the fear of crowding the places with too many trees and shrubs.

DESIGN XIX.—*To lay out a villa residence of two acres, within a regular boundary, in the geometrical style.*

339. *Ground plan, &c.*—The object in this case is to produce a splendid effect at a moderate expense of annual keeping, but with no regard to profit. The general form of the ground is that of a parallelogram, and its disposition is so clearly shown in the isometrical view (*fig.* 136.), that it will require little or no description. The entrance is through a straight avenue to a flight of steps, which leads to a raised platform on which the house stands. To the right and left of the avenue are double rows of trees, which may be fruit-bearing kinds, such as the apple, pear, cherry, and plum. Beyond these, on each side, are two small kitchen-gardens, intended for gooseberries, strawberries, and other small fruits, and for potherbs, tart rhubarb, spinach, kidney-beans, and a few such vegetables as are desirable to have always at hand. The house and these kitchen-gardens occupy about half the entire residence. The other half is laid out in the form of a sunk flower-garden, consisting of a variety of curvilinear beds, bordered by a kerb of stone, and surrounded by turf. From the terrace walks there are four descents to this garden, each consisting of a double flight of steps. Each bed is supposed to be planted with one kind of herbaceous plant, so as to produce large masses of colour. The mode of selecting plants for this purpose, as well as lists of suitable plants, have been already given (p. 69. and p. 123.), and further resources will be found in the lists given in the after part of this work. The sloping border between the sunk area and the flower-garden may either be planted with low evergreen shrubs, with roses kept low, or it may be in turf, or in rockwork: in the latter case, it may be covered with a collection of rock plants. Perhaps the most appropriate disposition of this sloping border would be to vary it with ornaments of box, on a ground of turf, so as to give it the appearance of an architectural moulding. In the centre there is a fountain. In situations where so much turf was not desirable, the walks between the beds might be of gravel or paved; but they will produce the best effect in turf. Instead of a raised terrace-walk surrounding this flower-garden, there might be in its place a narrow conservatory, such as that remarked on in p. 234.; in front of this conservatory, a narrow border for Cape and other half-hardy bulbs; then a terrace-walk, two steps lower than the level of that within the conservatory, with another narrow border, and beyond that a low

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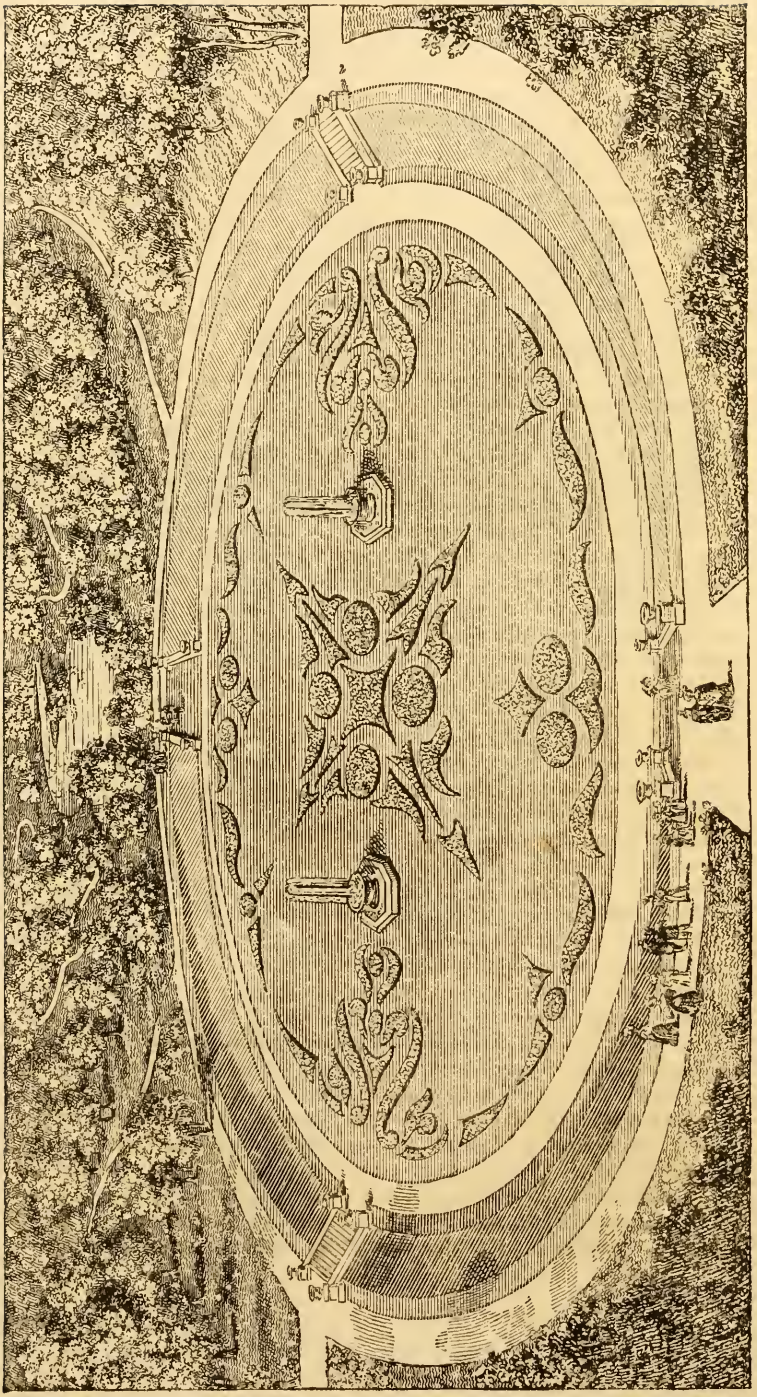

parapet wall, ornamented with vases. This terrace-walk, though not so high as that represented in the figure, should still be at least 5 ft. above the level of the flower-garden, in order that the spectator may look down on it in such a manner as to see the shapes of the beds. We have observed, in a preceding page, that wherever the figures forming a flower-garden are regular or symmetrical, to be seen in their full beauty, the eye should be so elevated, as, when looking down on them, to be able to comprehend the entire shape of each bed. What the height of the eye ought to be, to do this, may always be determined beforehand, by ascertaining the width of the flower-garden or symmetrical figure, the distance between the beds, and the position of the spectator. In general, the angle made by a line drawn from the farther edge of the most distant bed to the eye of the spectator, should not be less than 15°; and hence, taking the height of the human eye at 5 ft., a square or circular symmetrical flower-garden, of 40 ft. in diameter, ought to be surrounded by a walk raised to the height of at least 4½ feet above its level; while a flower-garden of double the size ought to be surrounded by a walk 9 ft. high. When a parterre of symmetrical beds is to be planted with low shrubs, such as rhododendrons, azaleas, kalmias, &c., the surrounding walk ought to be made higher, in proportion to the anticipated growth of the plants. These rules, the correctness of which no person of any experience will, we think, dispute, show that, when very large spaces are to be laid out as flower-gardens, symmetrical figures need not be attempted, except near the walk, where they will be immediately under the eye, unless they are so situated as to be seen from different heights. Hence, in very extensive designs, such as *fig.* 137., two systems of symmetrical figures are adopted; one near the margin of the walk, to be seen from the terrace immediately adjoining; and the other in the centre, to be seen from more elevated and distant points of view. If the reader will always bear in mind, that, to see any figure distinctly, the rays of light reflected from the most distant points of it must meet the eye of the spectator at an angle of 15°; and that this angle will not be obtained by an individual, whose eye is 5 ft. from the ground, at a greater distance than 20 ft., he will never be at a loss.

Fig. 138. shows the different heights which a terrace-walk requires to be above the level of the flower-garden, according to the size of the garden.

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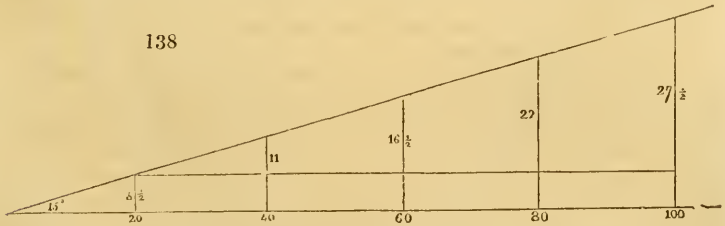

340. *A rosarium* might easily be formed in the sunk garden shown in *fig.* 137., by planting the dwarf roses in the beds nearest the walks; and the standard roses in the beds in the centre; arranging the others by planting trees of different heights, so as to give the clumps a sloping appearance, with the highest plants in the centre. The plants may be selected from the lists of roses to be given in an after part of this work.

DESIGN XX.—*Plan of the grounds of Chester Holme Cottage, laid out by Mr. Harland.*

341. *General observations.*—This cottage (see *fig.* 139.) was the residence of the late Rev. Anthony Hedley. It is situated in a most romantic spot, at

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the head or opening of a deep rocky glen, which runs southward, and the bottom of which is washed by the Chinely Burn, a small stream which falls into the River Tyne. The Burn runs for some time in a southerly direction; when, suddenly turning eastward, it approaches the house, and, just opposite to it, forms a beautiful natural cascade, which is seen to great advantage from some of the principal windows. It here turns at right angles, and runs southward, down the west side of the grounds, over a complete bed of shelving rocks, and under a rustic bridge at the south extremity; and, a short way below, it is turned aside westward by a very high rock, which is crowned with hanging woods. On the east, south-east, and west, rise gently-swelling hills, beautifully covered with wood.

342. *Ground plan, &c.*—From the elevated situation of the house *a* in *fig.* 140., and the quick descent from it, it became necessary to make a considerable terrace (*b*) on the south side, to give ease and facility to the approach and walk round the house; and which terrace is continued quite through to the east side, where it turns into the walk. Below this is another terrace (*c*), which also leads into the same walk, and upon which are clumps of American plants (*d*). This is divided from the kitchen-garden by a narrow belt of shrubs; from which a border (*e*) has a considerable inclination to the walk. The garden (*f*) inclines rapidly to the southern extremity, and is only intended to produce common vegetables, and the commoner fruits. This garden, placed where it is, must be allowed to be the worst part of the plan; and it is but justice to mention that it was not so designed originally. "If the garden had been placed where I first proposed it, at *g*," says Mr. Harland, "with a good wall at the north extremity, which would have served both as a fruit-

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wall and a boundary, the present garden would have made an interesting addition to the pleasure-grounds. I had proposed to unite this part of the grounds to the woods of the adjoining hill to the eastward, by pulling down a side wall, and by thinning out, and varying the outline at the margin of the wood, and facing it with ornamental trees and shrubs, with a winding walk leading to the rustic bridge (*h*), from the west side of which the walk might have been led by an easy curve to another bridge (*i*), where it would reunite with the pleasure-grounds." Various conveniences, including a subterraneous passage, are indicated on the plan from *k* to *n*. The approach-road (*o*) is 10 ft. wide, and the walks (*p*) are 4 ft. wide. The flower-borders are at *q*, the stables, &c., at *r*, and there is a vista at *s*, showing the ruins of a Roman station.

343. *Planting.*—The ornamental trees used in planting this place were the scarlet maple, the Norway maple, the scarlet horse-chestnut, the yellow horse-chestnut, or buckeye, the cut-leaved alder, the sweet chestnut, the purple beech, the common beech, the flowering ash, the larch, the Weymouth pine, the Cembra pine, and some other ornamental kinds; various kinds of poplar, the scarlet oak, the evergreen oak, and the American lime-tree. The shrubs and low trees were laurels, Portugal laurels, hollies, laurustinus, box, arbor vitæ, juniper, red cedar, aucuba, alaternus, arbutus, sweet bay, laburnum, lilacs, spindle-tree, dogwood, guelder rose, garden syringa, bird cherry, snowberry, Irish yew, and various kinds of rhododendrons, kalmias, and azaleas. Near the Burn were planted two weeping willows, a weeping elm, and a weeping ash. It is remarkable that no kind of cratægus is mentioned in this list, though the situation appears remarkably well adapted for plants of that genus.

Design XXI.—*Descriptive notice of Bedford Lodge, the villa of Her Grace the Duchess Dowager of Bedford, at Campden Hill, near London.*

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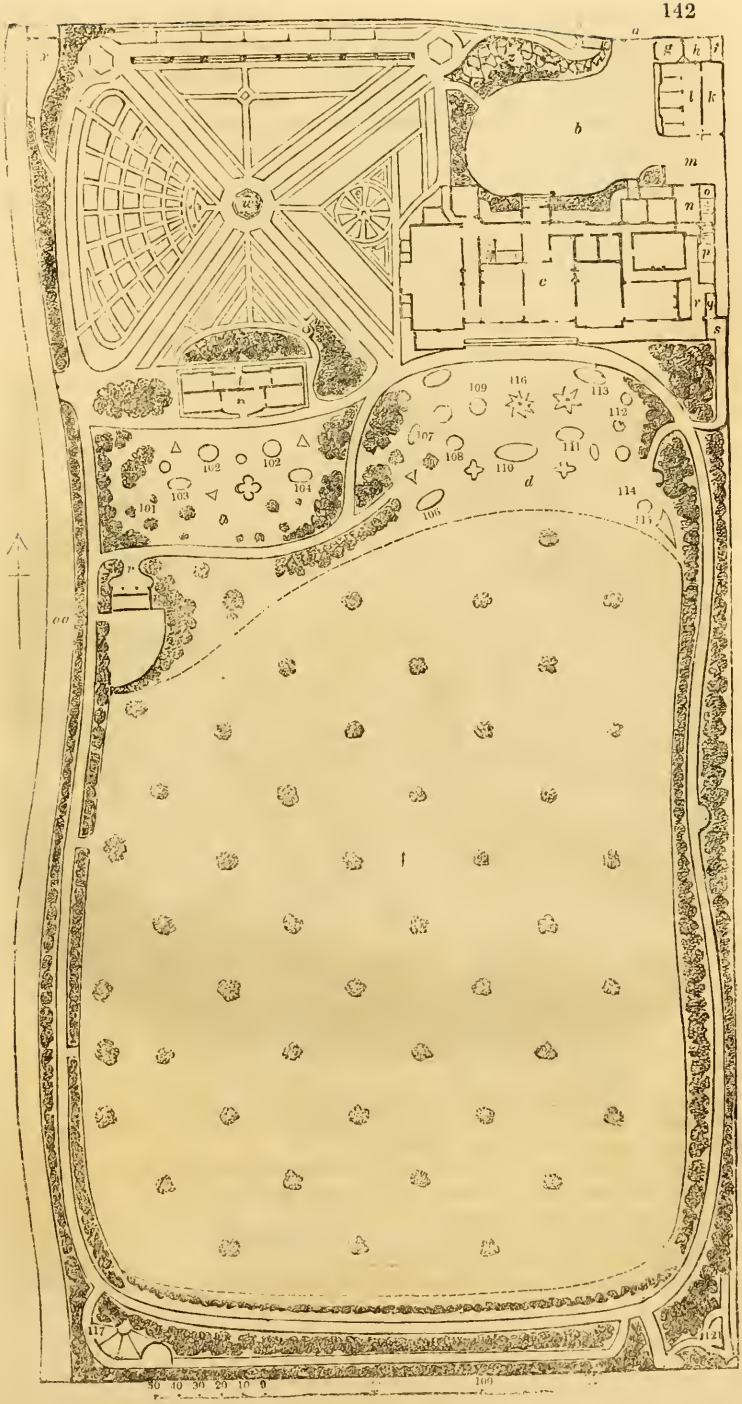
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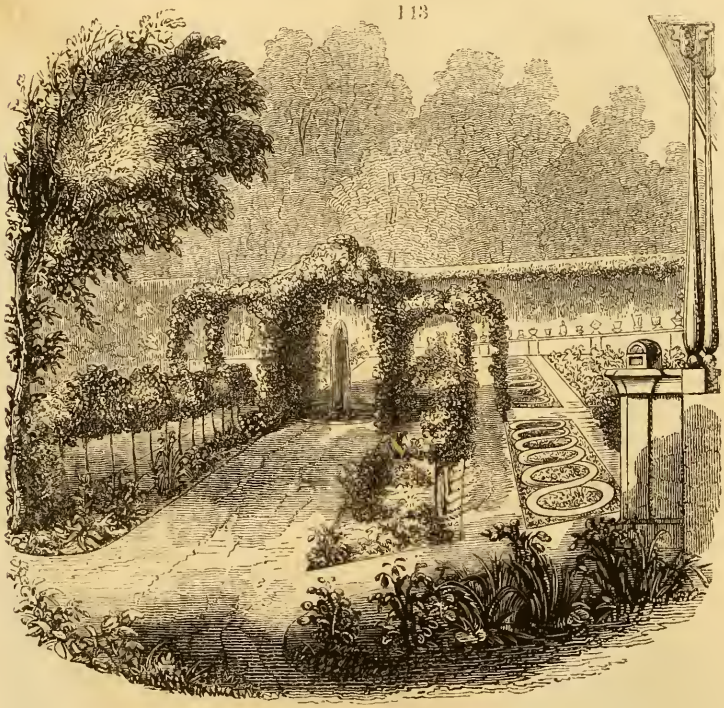
344. *Ground plan, &c.*—*Fig.* 141. is a view of the south-front of the house, showing the verandas, the flower-beds, and the scattered trees and shrubs on the lawn; with an ivied arbour on the right, and a large arbutus, clipped into a hemispherical form, on the left. This tree has since been cut down.

Fig. 142. shows the general plan of the entire place, and the following are references to it:

a, Entrance gates. *b*, Entrance court. *c*, Mansion.
d, Lawn on the south front, which is entered from a veranda extending the whole length of that front. *e*, Flower-garden on the west front.
f, Orchard. *g*, Porter's lodge. *h*, Groom's room.
i, Cistern for supplying the offices. *k*, Coach-house. *l*, Stable.
m, Stable-yard. *n*, Wood and coal-shed. *o*, Servants' privy.
p, Larder. *q*, Dust-bin. *r*, Sunk area. *s*, Tool-house.



t, Gardener's working-sheds, &c. *u*, Green-house, in three divisions.
v, Rustic seat, at the back of which is a green-house, and beyond that a frame-ground, for bringing forward plants for the flower-garden.
w, Marble basin and fountain, in the centre of the flower-garden, covered with a bower of trellis-work and climbers, a view of which is shown in *fig.* 143.
x, Potting-shed and compost-ground.
y, Cistern for supplying the fountain at *w*. *z*, Rockwork.
&, Arcade of climbing roses, seen from the house
a a, Public lane, which separates the grounds of Bedford Lodge from those of Holland House.

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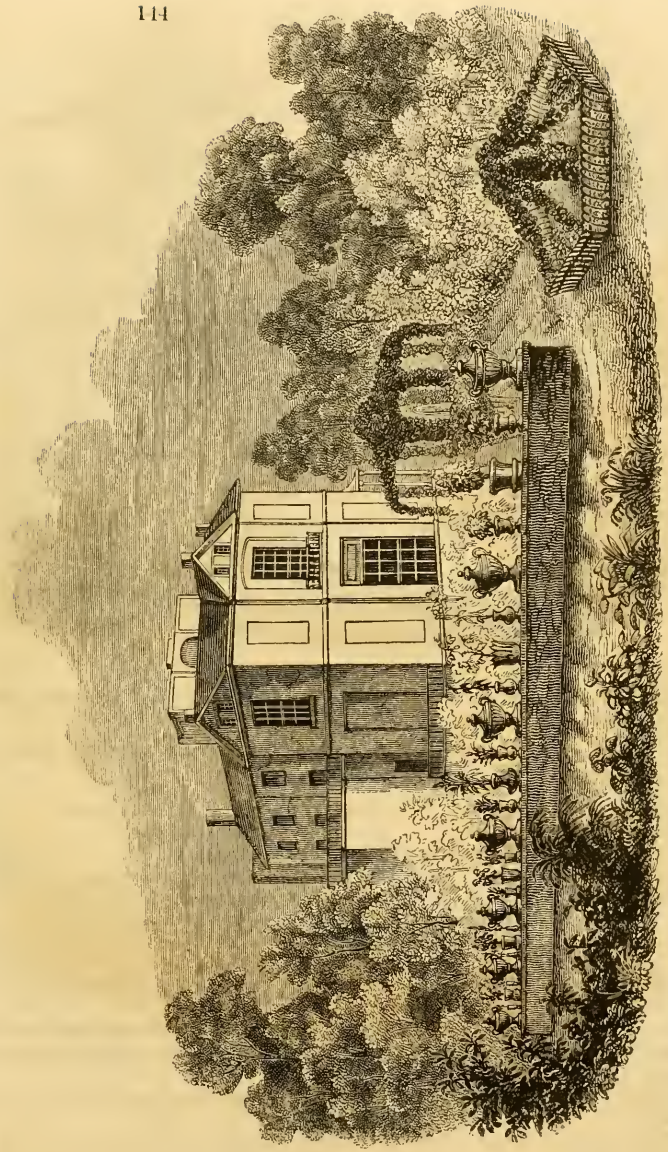

Fig. 144. shows the dwarf or terrace-wall in the flower-garden; the west front, and part of the entrance front, of the house; the basket near *x*, in *fig.* 142.; and the central arbour (*w*) in the same figure, and shown, also, in *fig.* 143.

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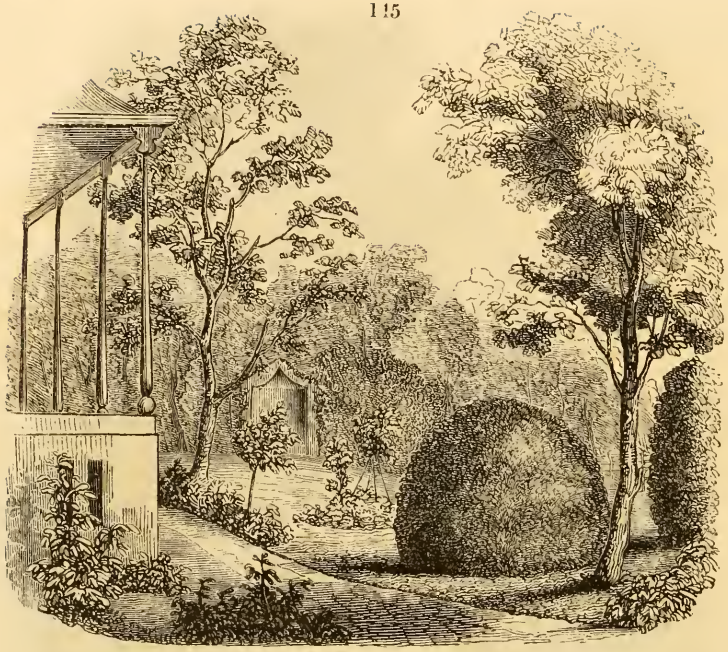

Fig. 145. is a view from the flower-garden, showing the arbutus, a front view of the ivied arbour, and part of the veranda.

Fig. 146. is a plan of the flower-garden on a larger scale, and the following are references to it:

a, Grand drawing-room. *b*, Veranda. *c*, Green-house.
d, Fountain and arbour. *e e*, Pedestals and vases.
f, Dwarf or terrace-wall, surmounted by vases, as shown in *fig.* 144.
g g, Flower baskets. *h*, Potting-shed and reserve ground.
i, Shrubbery. *k*, Entrance from the lane.
l, Lawn sloping from the veranda. *m*, Part of the entrance court.

1, Rockwork, on which are planted alyssums, arabises, iberises, cheiranthuses, aubrietias, campanulas, cardamines, achilleas, sedums, antirrhinums, gilias, nemophilas, lasthenias, violas, saxifrages, verbenas, nierembergias, geraniums, scillas, anagallises, helianthemums, cistuses, and pentstemons.

2, A basket filled with Provins roses, pegged on the ground, and China roses; and with iron rods from each of the angles to the centre, forming a crown, on which *Convólvulus màjor* is trained.

3, *Anemòne* horténsis, purplish; Heliánthemum *ròseum*, pink; and Fúchs*ia* globòsa scarlet.

4, Wall, in front of which are planted summer and autumn-flowering roses, as well as green-house creepers, which are trained against it. Many of the autumn-flowering roses require to be protected from frost; but some of these were preserved throughout the severe winter of 1837-8, without protection, by having hardy roses budded on their extreme shoots; as, for example, the Brennus or Brutus rose, on the Lamarque rose. In this case, the Brennus rose (rich crimson) flowered first, luxuriantly; and was followed by the Lamarque (a pale yellow rose), which also flowered well; though the Lamarque

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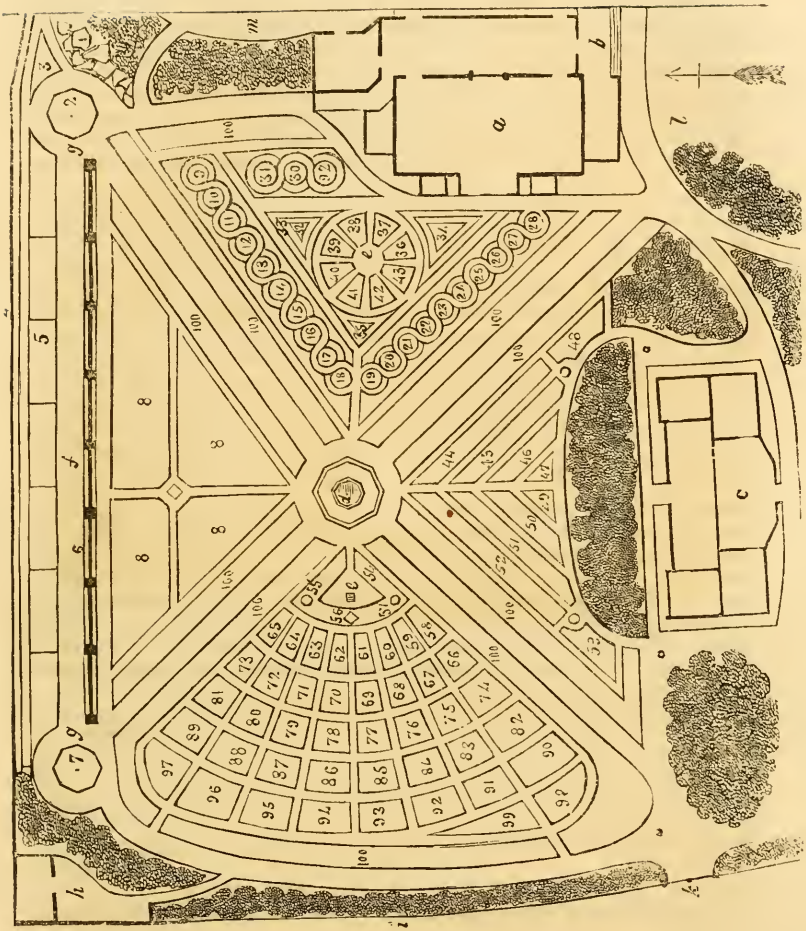


rose, in all cases where the shoots were not budded, was killed back by the frost. It thus appears that the vigorous growth of the scion had thrown the Lamarque stock into a state of vigorous growth, at a time at which the Lamarque would otherwise have been quite dormant.

5, A border, formed into compartments, from the plants in it being arranged in masses, so that the flowers of the one may tend to show those of the others to the greatest advantage. The following list of plants will show more clearly the effect that is meant to be produced, by their being arranged in the list, in the same order as they were planted in the border. The first effect produced was from the following Californian annuals:—Nemóphila insígnis, blue; Platystèmon californícus, cream colour; Collínsia grandiflòra, purple; Collòmia coccínea, scarlet; Eschschóltzia cròcea, deep yellow; Gília tricolor, lilac, white, and black; and G. achilleæfòlia, purple. These are all annuals, and were sown about January in the compartments, where they come into flower about the beginning of May, and continue flowering till the end of June or

beginning of July, when the greater part of them should be cleared away, in order that they may not draw up, and weaken the plants which are to succeed them, and produce the second effect. The flowers for this second exhibition are all perennials, and consist of Œnothèra macrocárpa, yellow, for the first compartment, which remains there as a permanent plant, the seeds of the Nemóphila having been sown amongst it in January, as above. The next compartments contain *V*erbèna Tweedie*àna*, crimson; *V.* Lambert*iàna*, purple; Calceolària angustifòlia, yellow; *Petùnia violàcea*, purple; scarlet geraniums, and *V*erbèna Drummóndi. These are all half-hardy perennials, which are kept in pits during the winter, and planted out as soon as there is no danger to be apprehended from frost.

6, The dwarf or terrace-wall, before mentioned, on which vases of different shapes and colours are arranged and filled with plants; those plants being chosen, the colours of the flowers of which will produce the greatest contrast with the colour of the vases in which they are planted. Different kinds of nasturtiums have been planted at the foot of this wall, on which they climb and hang over. On the south side of this wall are Scotch roses, and on the north crimson perpetual roses; the former having a border in front of it filled with the Campánula spéculum (Venus's looking-glass), and the latter with Convallària majàlis (the lily of the valley). These borders relieve the eye, when contrasted with the green of the roses which they are in immediate connexion with.

7, A basket corresponding with that at 2, in which Calceolària angustifòlia, yellow, occupies the whole space, with the exception of a plant of Maurándy*a* Barclay*àna*, blue, which is planted in the centre of the group of calceolarias, and trained over a rod and wires in the centre, as shown in *fig.* 144. This basket is shown in the right-hand corner of *fig.* 144.

8, Rosarium, which is planted with summer and autumn-flowering roses. Those the flowering of which is of short duration may, in some cases, have it prolonged, by leaving several of the shoots their whole length, and pegging them down. When thus treated, the part next the root will grow luxuriantly, and consequently be late before it comes into flower; while the extreme end, becoming comparatively stunted, will come sooner into blossom. In the following list, the first-named plant in each bed comes into flower in May and June, and the other plant or plants, in succession, in June, July, and August. There is an equal number of plants of both the early and late flowering kinds in each bed; and, as the latter come into flower before the former have done flowering, there is a constant display from May to September, which is the whole period that the family reside at, or visit, the residence. When the first set of plants begin to go out of flower, they are cleared away to make room for the second set, which are encouraged by stirring the soil and watering; and any blanks that may occur are filled up from the reserve garden. Most of the plants which come first into flower are annuals or bulbs, sown or planted in the autumn: the others are mostly half-hardy species, such as verbenas, petunias, lobelias, &c.; and they are preserved through the winter in pits.

9, Nemóphila insignis, blue; and *V*erbèna Arran*iàna*, purplish crimson.

10, Lasthènia califórnica, bright yellow; and *V*erbèna chamædrifòlia latifòlia, brilliant scarlet.

11, Erythrònium Dens canis (dog's tooth violet), Gil*ia* tricolor, and *V*erbèna pulchélla, pink.

12, Collòmia coccínea, and *L*òtus microphýlla, dark yellow.

13, *S*cilla amœ'na, blue; Platystèmon califórnicus, cream-coloured; and Lantàna Sellòw*ii*, pink.

14, *S*cilla præ'cox, rich dark blue; Gil*ia achilleæfòlia*, and *S*álvia chamædryöides, blue.

15, *S*cilla *hyacinthöides*, blue; Cheiránthus alpìnus, pale yellow; and *V*erbèna Tweedie*àna*.

16, *N*arcíssus mìnor, yellow; and Nemóphila atomària, and Nierembérg*ia* grácilis, both white.

17, *A*nemòne apennìna, blue; Collíns*ia* grandiflòra, purple; and *V*erbèna Sabìn*i*, purple.

18, *A*nemòne nemoròsa, white; Limnánthes Douglàs*ii*, white and yellow; and *V*erbèna chamædrifòlia, scarlet.

19, Erythrònium lanceolàtum, Leptosìphon *a*ndrosàceus, pinkish; and *V*erbèna pulchélla álba.

20, Muscàri *b*otryöides, grape hyacinth, purple; Eùtoca Menzièsii, lilac; and *V*erbèna chamædrifòlia.

21, Fritillària lùtea, yellow; Collòmia laterítia, pinkish; and Nierembérg*ia* intermèdia, purple,

22, Galánthus plicàtus, plaited snowdrop; Saponària ocymöides, pale pink; and *V*erbèna radìcans, pinkish.

23, *H*yacínthus amethýstinus, Lasthènia glabràta, yellow; and Lobèl*ia* lùtea.

24, Bulbocòdium vérnum, whitish; Gíl*ia* tricólor álba, and Nierembérg*ia* calycìna.

25, *A*nemòne pavònia, scarlet; *V*erbèna incìsa, pinkish; and Eùtoca Menzièsi*i*, lilac.

26, *A*nemòne *Pulsatilla* and Campánula carpática, blue.

27, Prímula vulgàris plèna atropurpùrea, and *A*nagállis grandiflòra, scarlet.

28, Prímula vulgàris plèna violàcea, and *A*nagállis Phillípsi*i*, blue.

29, Collíns*ia* bícolor, pinkish lilac and white; and Alonsò*a* linearis, scarlet.

30, *A*chillèa moschàta, and *V*erbèna pulchélla álba, white.

31, *I*bèris carnòsa, and *V*erbèna sulphùrea.

32, Lupìnus nànus, blue; Fúchs*ia* globòsa and F. cónica.

33, Gíl*ia* tricólor, and Œnothèra macrocárpa.

34, Nemóphila atomària, *Petùnia* phœnícea, and *V*erbèna Tweedie*àna*.

35, Nemóphila insígnis, and *V*erbèna pulchélla álba.

36, Nierembérg*ia* grácilis.

37, Lobèl*ia* lùtea,

38, *V*erbèna Sabìn*i*.

39, *V*erbèna chamædrifòlia.

40, *V*erbèna pulchélla álba.

41, Lobèl*ia* lùtea, yellow.

42, Lobèl*ia* grácilis, blue.

43, *V*erbèna chamædrifòlia latifòlia.

44 Is in two compartments; one of which is planted with Gíl*ia achilleæfòlia* and *V*erbèna Tweedie*àna*, and the other with hyacinths, Nemóphila insígnis, and Œnothèra macrocárpa.

45, Collíns*ia* bícolor, and carnations.

46, Calceolària pícta, lightish.

47, *A*nemòne nemoròsa plèna, and *L*ysimàchia Nummulària (moneywort), yellow.

48, Heartsease.

49, *A*nemòne apennìna, blue; and *V*inca herbàcea (periwinkle), lilac.

50, Calceolària integrifòlia, yellow.

51, *V*erbèna pulchélla.

52 Is in compartments; one of which is planted with Calceolària rugòsa, yellow; and the other with a variety of that species, both pegged down on the ground, in order to make the plants cover the whole space of the bed.

53, Œnothèra macrocárpa.

54, Nemóphila insígnis, and *V*erbèna Tweedie*àna*.

55, Isótoma axillàris.

56, *S*enècio élegans, purple.

57, Nierembérg*ia* grácilis.

58, Gíl*ia* tricólor, and Nierembérg*ia* calycìna.

59, Lasthènia glabràta, and *V*erbèna chamædrifòlia.

60, Gíl*ia achilleæfòlia*, and *L*òtus microphýlla.

61, Crucianélla stylòsa, pinkish.

62, Nemóphila insígnis, and *V*erbèna chamædrifòlia latifòlia.

63, Nemóphila atomària, and *V*erbèna pulchélla álba.

64, Eùtoca Menzièsi*i*, and *V*erbèna radìcans.

65, Collòmia coccínea, and Nierembérg*ia* filicaúlis, whitish.

66, White ten-week stocks, and *V*erbèna Tweedie*àna*.

67, Cheiránthus alpìnus, and Eschschóltz*ia* crôcea, orange.

68, Purple ten-week stocks, and Eùtoca víscida, bright dark blue.

69, *A*lýssum saxátile, yellow; and Œnothèra macrocárpa.

70, *P*olemònium sibíricum, yellow; and Agathæ'a cœléstis, blue.

71, *I*bèris saxátilis, white; and the Frogmore scarlet pelargoniums.

72, Cheiránthus ochroleùcus, and Œnothèra missouriénsis.

73, Scarlet ten-week stocks, and *P*hlóx Drummónd*ii*.

74, *V*erbèna Drummónd*ii*, light lilac.

75, Scarlet pelargoniums.

76, Indian chief calceolaria.

77, *Petùnia* erubéscens, whitish.

78, Scarlet pelargoniums.

79, *V*erbèna venòsa, purple.

80, Clárk*ia* pulchélla, purple; and Melíttis grandiflòra, whitish.

81, *L*upìnus nootkaténsis, blue; and *V*erbèna sulphùrea, yellow.

82, *L*ysimàchia verticillàta, yellow.

83, *D*elphínium grandiflòrum, and carnations.

84, *Petùnia*, supérba, brilliant dark reddish purple.
85, Purple calceolarias. 87, *Petùnia nyctaginiflòra*, white.
86, Calceolària integrifòlia. 88, Calceolarias of all sorts.
89, *Lupìnus* polyphýllus, and Stenáctis speciòsa, bluish.
90, *Lupìnus* polyphýllus, blue; and *Málope* grandiflòra, dark crimson.
91, *Œnothèra* speciòsa, white.
92, *Gèum* coccíneum, and Linària dalmática, yellow.
93, *Antirrhìnum* pictum, crimson and white.
94, *Mímulus* cardinàlis, and Coreópsis tinctòria.
95, *Gília* capitàta álba. 96, *Lysimàchia* quadriflòra, yellow.
97, *Lupìnus* polyphýllus álbus, and *Œnothèra* speciòsa.
98, Chelòne barbàta, and *Sálvia* fúlgens, scarlet.
99, *Asclèpias* tuberòsa, orange. 100, Borders for plants of sorts.

In the compartments next the beds are sweet peas, larkspurs, candytuft, dahlias, China pink, stocks, &c.

The following references are to the general plan (*fig.* 142.):

101, Heartseases of different colours, and Maurándy*a* Barclay*àna*, blue and white; Tropæ'olum peregrìnum, yellow; Sóllya heterophýlla, bright blue; Tropæ'olum pentaphýllum, red and yellow; Eccremocárpus scàber, orange; Lophospérmum scándens and L. erubéscens, red, trained on wirework.
102, *Alýssum* saxátile, and Indian chief calceolaria, yellow ochre.
102 *bis*, *Ibèris* sempervìrens, and Frogmore scarlet pelargoniums.
103, Stocks of sorts. 104, *Phlóx* Drumméndii.
105, *Lupìnus* polyphýllus, blue; and Lysimàchia verticillàta, yellow.
106, *Lupìnus* nootkaténsis and L. nànus, with a border enclosing it of *Achillèa* tomentòsa, yellow. 107, Calceolarias of sorts.
108, Wallflowers, iberises, and alyssums; clarkias, collinsias, and *Antirrhìnum* caryophyllöides.
109, Wallflowers and scarlet pelargoniums.
110, Cheiránthus alpìnus, and clarkias, eutocas, gilias, nemophilas, and petunias.
111, Geraniums of sorts.
112, *Ibèris* saxátilis, and scarlet pelargoniums.
113, Nemóphila insígnis, and *Verbèna* Tweedie*àna*.
114, *Alýssum* saxátilis, and Calceolària angustifòlia.
115, Noisette roses.
116, Groups round trees, consisting of alyssum, aubrietia, cheiranthus, and heartsease of sorts.
117, *Ibèris* saxátilis, and *Gília* tricolor.
118, *Alýssum* saxátile, and dwarf nasturtium.
119, Aubrièt*ia* purpùrea, and Nemóphila insígnis.
120, Collòmia coccínea, and Fúchs*ia* globòsa.

The basket in the centre of the compartment is planted with Lobèl*ia* grácilis, in the middle of which is a plant of Fúchs*ia* globòsa.

121, Small garden, with rockwork, planted with alpine plants, similar to those enumerated for the rockwork 1, in *fig.* 146.

In the description given of this place by Mr. Caie, gardener to Her Grace, he says: "Little difficulty will arise in procuring and preserving the plants enumerated in the foregoing list. Many of them are hardy perennial herbaceous plants; and most of the others, which are annual, will, if allowed to stand to ripen their seeds, sow themselves. The kinds which will require most practical knowledge are those which are generally termed green-house plants; but which are so hardy as to produce as splendid a show in our flower-gardens during the summer months, as they would do if they were in their native countries. As it is with this latter class of plants that we have

most to do in filling flower-gardens during summer, it will here be my object to show how they may be preserved during winter, without the aid of green-houses. The pits in which such plants should be kept, will require to have their walls of 14-inch brickwork, and pigeon-holed; with tiles half an inch thick, set on edge, 2 inches from the wall inside, to be carried as high as the pigeon-holes; in which small apertures may be left, in order that a little steam may be admitted into the pit, from dung linings or dead leaves, if necessary: but no heat from dung linings will be required, except in the most severe weather, and then only just sufficient to keep out the frost. The heat of the dung or leaves, applied to the outside of the walls, will readily penetrate into the pit, having nothing to oppose it but the thin tiles set on edge. September will be quite soon enough to begin putting in cuttings. The soil in which they are to be inserted should consist of equal portions of peat earth and silver sand; and those of them that are subject to damp off may have a greater proportion of the sand. The pots or pans in which the cuttings are put should be well drained."

Subsect. 2.—*Culture of small country villas.*

345. *The culture of the gardens* of small country villas differs materially from that of suburban villas; as the plants are more healthy, and require less general care. The distance at which plants of this kind grow from the smoky atmosphere of a town, prevents their leaves from becoming choked up with the soot, and the glutinous matters deposited by the smoke, which are so difficult to wash off, and which require such constant syringing. The leaves of country trees are, it is true, sometimes covered with dust, particularly if they grow near a road; but the dust is easily washed off by a slight shower, and it is not very injurious if it is suffered to remain on; besides it is only the trees near the road which are liable to be covered with dust, and these are seldom of any choice kinds.

346. *Raising new plants* is an important part of garden culture in the country, as the men who carry plants from door to door in the suburbs of London, and sell them at very low prices, are no longer to be met with; and plants procured in a nursery are generally too dear for planting out in beds in the open ground. It, therefore, becomes necessary for the gardener of a country villa to have hot-beds for raising seeds and striking cuttings, and pits and green-houses for keeping his plants in during winter, the directions for forming and managing which will be found in the latter part of this work; where also will be found details respecting the making of cuttings and sowing of seeds, &c., to which we refer our readers.

Subsect. 3.—*Renovation of small country villas.*

347. *When the grounds* of a small country villa have been neglected, almost all the trees and shrubs will have become overgrown and shapeless, and will require to be either cut in or cut down, or even, perhaps, rooted out.

348. *In cutting down trees and shrubs*, regard must always be had to whether the plants so cut have the property of springing up again from the stool or root; or, as the technical term is, whether they stole. It often happens that trees and shrubs which have become naked below, and very unsightly, when cut down within an inch of the ground, will spring up with great vigour; and, in an incredibly short time, will form splendid bushes, or,

if trained to a single stem, handsome trees. This most sorts of trees and shrubs will do when cut down, in less than one fourth of the time that would be requisite for the attainment of the same result from young trees. Before, however, the operator ventures to cut down trees or shrubs to the ground, he ought to inform himself of two particulars respecting them. First, whether they are of kinds that stole, and, secondly, whether or not they have been grafted. To cut down a tree or shrub that does not stole, or that stoles imperfectly, such as the spruce fir, the holly, or the juniper, is, in effect, to remove it altogether; and to cut down a grafted tree or shrub below the graft, even if it should stole, is to substitute one kind for another. For example, if a medlar, which is generally grafted on a thorn, and an almond, which is commonly grafted on a plum, were cut down, there would shoot up in their stead a common hawthorn and a wild plum; while, if they were cut above the graft, we should have the medlar and almond re-produced. Some of the finest trees that are introduced into pleasure-grounds are different species and varieties of crabs, cherries, thorns, plums, maples, variegated sycamores, oaks, elms, to which we might add a host of others, all of which are grafted on the common and free-growing species of their respective genera; some a few inches above the surface of the ground, and many at heights varying from 5 or 6 inches to 5 or 6 feet. If, then, these trees were cut down close to the ground, we should have nothing but the commonest kinds coming up to succeed them. In some cases, indeed, where a stock has been used which does not stole, as in the case of all the resinous tribe which are grafted, there would be no succession at all, which is still worse. There are also a number of trees and shrubs which stole freely when young, but which scarcely stole at all if not cut down till they have attained their full size. Among these are the beech, hornbeam, Scotch elm, birch, privet, phillyrea, arbutus, and a number of others, all of which will be found indicated in the *Hortus Britannicus*. By neglecting to attend to cutting above the graft, we have known a tolerable collection of trees and shrubs reduced to a mass of the commonest kinds, which it was necessary to have re-grafted, or rooted out, to give place to fresh plants; and we know a large camellia-house in Kent, in which a collection of the finest kinds of camellias having lost their leaves by insects and disease, and having been ordered by the head gardener to be cut down, in order to renovate them, were cut by an ignorant journeyman so low, that all the shoots from the stools proved to be the single red. When a gardener of skill, and some taste, has the renovating of an old place, he will generally be able to produce, by cutting in and cutting down, very striking effects in a short time, from the great rapidity of the growth of shoots from stools, the number which are thrown up, and the immense bush, or tree, which is formed by them. We have known the stool of a common laurel throw up shoots 6 ft. high in one season, and a tree 20 ft. high raised from the stool of an *Acer* Pseùdo-*Plátanus* in five years. The stools of the locust (Robínia Pseùd-*Acàcia*), in suitable soils, will produce a considerable tree in three years, all the suckers being removed but one.

349. *If the person who has purchased or taken a lease of a residence which requires renovating* be much attached to gardening pursuits, and can afford the expense, his best mode will often be to root out every tree and shrub on the premises, except specimens of decided beauty, variety, singularity, or usefulness. By specimens of decided usefulness are meant such trees as shelter the

house, or some object within the boundaries of the residence; such as conceal objects which it is not desirable to see either within the boundaries or beyond them; and such as produce shade, say for a seat or walk, during the heat of summer. The condemned trees and shrubs having been rooted out, the ground should be thoroughly trenched to the depth of 3 or 4 feet, and mixed with manure; the drains, walks, walls, and all the buildings, being attended to, and put in repair, according to the mode suggested in p. 150., &c. If the ground be trenched 3 or 4 feet deep, it should remain at least six months before it is planted, in order that it may be consolidated by rains. For this reason, the best time for deep trenching is early in autumn, in order that the rains of that season may equalise the sinking of the soil. In many, and perhaps in most, cases of renovating a villa garden, the situation of some of the main features, such as the flower-garden, the kitchen-garden, the conservatory, some of the ornamental structures, &c., will require to be changed; and this is another argument in favour of the rooting out of the greater number of the trees and shrubs. It may also be thought advisable to make some undulations or other inequalities on the surface of the lawn; or to enlarge the apparent extent of the place, by carrying some of the walks under others in tunnels, or over them on bridges; and this cannot be done without the removal of all the trees and shrubs in such situations. In changing the situation of the kitchen-garden, regard must be had to a proper communication between it and the stable-yard, for dung; because, if the garden has been properly placed at first, it will, in general, be immediately adjoining the stable-court; and, consequently, if its situation be changed, it can only be to some spot more or less distant from it, which will hence be more or less inconvenient.

350. *Where the occupier only contemplates a temporary residence*, it will probably be advisable to give only a temporary repair; and, when this happens, thinning and pruning applied to the trees and shrubs, and washing over with cement to the walls and out-buildings, will be the leading points of renovation. The lawn, in such places, will generally be more or less worn out, and particularly on those spots which have been covered with the trees or bushes removed. The whole of the lawn ought to have the coarser weeds, such as dandelion, &c., removed, and the inequalities levelled with soil of the same kind as that on which it is laid, in order that, when it is consolidated, it may form a similar surface in point of texture; after which, the whole ought to have a top-dressing of rich compost; and all the places not completely covered with grass ought to be sown thickly with the following mixture:—*Agróstis* vulgàris var. tenuifòlia, *Festùca* duriúscula, *F.* ovìna, Cynosùrus cristàtus, *Pòa* praténsis, *Avèna* flavéscens, and *Trifòlium* minus. These seeds should be mixed together in equal portions, and sown at the rate of from 4 to 6 bushels per acre. The gravel walks, instead of being taken up and relaid entirely with fresh gravel, may be stirred, and a thin layer of gravel laid on the top, and afterwards firmly rolled. Where the gravel is loose, it ought to be mixed with gravel of an adhesive nature, newly taken from the pit; or, if this cannot be procured, with Roman cement in a state of powder. The proportion of cement should be very small; not more than at the rate of half a pint of cement to one bushel of gravel. The gravel and cement ought to be intimately and rapidly mixed before laying them on the walk, and heavily rolled as soon after as possible. Where a yellow ferruginous clay can be procured, and where it is taken fresh from the pit, and instantly mixed

with the gravel, it will answer the same purpose as the cement; but, if it be exposed to the air for a day or two, it will be of little or no use. A mixture of clay and sand, or of brick-dust and lime, is sometimes used instead of ferruginous clay, but it is much less effective. In general, ferruginous gravels (such as the Kensington), when laid down fresh from the pit, and heavily rolled, become almost immediately as solid as a mass of plum-pudding stone; but if exposed to the air for a few days, so as to lose their moisture before they are laid down, the oxydised surfaces become so dry, that they will no longer form a conglomerate union, and consequently such gravel can only be held together mechanically, viz. by rolling. This, indeed, is the case with most gravels as at present treated.

351. *To render a place comfortable*, even for a temporary residence, three things are essential: first, that the house, and every building connected with it, should be put in thorough repair; secondly, that the drainage of the grounds, including the walks, lawns, and plantations, both under and above the surface, should be effective; and, thirdly, that the trees and shrubs should neither be so thick, nor in such quantities, as to prevent sufficient ventilation; nor so thin, nor so few, as not to produce sufficient shelter and shade. These points kept in view will serve as a guide at once to the intending purchaser of an old villa residence, and to the improver of one already in his possession.

352. *Renovating the kitchen-garden.*—Where the occupier has only a temporary interest in a residence, say of seven or eight years, though he may not think it worth his while to undertake substantial repairs, he will naturally require a supply of fruits and vegetables from the kitchen garden. Where the soil of the part devoted to vegetables is worn out, it will not answer his purpose to renew it, by taking out the old, and carting in fresh, soil; but he may restore it, by allowing it to rest for a year, or for two years in succession, without any kind of crop whatever: and, though it would be unreasonable to expect that he should purchase new fruit trees, yet he may graft the newest and best sorts on the branches of such as are already there. Fruit shrubs, such as the gooseberry, currant, raspberry, &c., he may renew either by cuttings, or by procuring young plants from the nurseries. It may be useful here to introduce, as a general remark, that the simplest, most effectual, and least expensive mode of renovating worn out soil of every kind is, to allow it to remain a certain period without any plants growing on it. This period may vary from six months to three years, according to the state in which the soil is; that in which there is most inert vegetable matter, and most seeds of weeds and eggs of insects, requiring the longest period of rest. During the resting period, all weeds should be destroyed while they are in the seed-leaf; and, in order to bring the greater number of the seeds of weeds into a vegetative state, as well as to admit air to the interior of the soil, it ought to be dug over, or trenched, three or four times a year, each digging being of a different depth from that which preceded it, in order to expose a fresh surface to the influence of the atmosphere, and thus occasion the germination of the seeds which the soil may contain. The manner in which worn out soil is benefited by resting is, by the admission of air to the interior of the soil; by the decomposition of the roots and other organised matters which it contains, from heat and the alternate action of dryness and moisture; and by the germination of the seeds of weeds, and the destruction of the eggs and larvæ of insects, snails, and worms, or their complete developement, and migration

from the spot, because no kind of animal can live where there are no vegetables to support it.

Subsect. IV.—*General observations on laying out, planting, and managing large Country Villas.*

353. *Large country villas* differ from those we have called small country villas, in having a paddock and dairy; and from country mansions, in not having a park and farm. The extent of these large villa residences may vary from four acres (three being, in most situations, the least quantity that will serve for keeping a cow, and one the least that will suffice for a suitable house, pleasure-ground, and kitchen-garden) to eight or ten acres, and upwards. The characteristics of this kind of residence being the paddock and dairy, we shall confine our introductory observations chiefly to them.

354. *The dairy.*—A cow, to a person with a family, is one of the principal sources of comfort derivable from a country residence. A cow, it is true, may be kept in town as well as in the country, and may occupy a stall in a stable, in the same manner as a horse; hay and straw being purchased for feeding and littering the one as well as the other. The cow, however, not being worked in the saddle, or in harness, like the horse, and not having either a large yard or a field to take exercise in, soon suffers in her health, and must, in that state, produce unwholesome milk. It is true there are some exceptions, where cows kept in gentlemen's stables in the metropolis are regularly exercised by driving them to some public park, where the pasturage is let out (such as Hyde Park, or the Regent's Park), and bringing them back again after they have remained there an hour or two; but this mode, besides being expensive, is too troublesome ever to become general; not to mention the injury which the cow sustains in being driven through crowded streets. Notwithstanding the evils attending want of exercise, it is a fact, though not generally known, that cows in some of the London dairies are kept stall-fed, and so treated as to give milk for two years in succession, without having a second calf. There are instances of such cows never having been once untied, from the day they were put up, till the day, two years afterwards, when they were sold to be fattened for the butcher. The confined places (frequently dark cellars) in which cows are lodged, and the state of filth from want of litter and drainage, and of closeness from want of ventilation, in which they are kept in the crowded parts of the metropolis, such as St. Giles's, Saffron Hill, Liquorpond Street, &c., are disgusting in idea; and, in reality, must be highly injurious to the health of those who use the milk as an article of food. Even the milk from cows kept a year or two without exercise, however cleanly and suitable the treatment may be for their condition, cannot, we should imagine, be so wholesome as that produced by cows that have abundance of exercise and air. Hence it is that the better-informed inhabitants of the metropolis, and all the higher classes, have their milk from suburban establishments to which grass fields are attached; and where the cows, though highly fed in the house, are yet turned out into these fields for a certain portion of every day throughout the year, except when the weather is of an extraordinary degree of severity.

355. *The cow-house should be of ample size*, with complete drainage and thorough ventilation; and the cow should be carefully cleaned every day with a currycomb and brush, in the same manner as a horse. When there is

only one cow, some other animal, the food for which will not be expensive, such as a pet lamb or a goat, ought to be kept in the cow-house; and this lamb, or a donkey, should be turned out with the cow into the field. The cow soon becomes attached to her companion, and this attachment is useful in keeping her quiet: for it is well known that restlessness and anxiety not only impair the quality of her milk, but considerably decrease its quantity. If two cows have been kept together for some time in the same pasture, and one is sold or taken away, the other will immediately begin to fall off in her milk (which will become thin and poor), and her uneasiness will be so obvious as to occasion pain to every one who sees her in the field. The dairy should be cool and well ventilated; but the construction of this building, and also that of the cow-house, will be found in our *Encyc. of Villa Architecture.*

356. *The breed of cows* used for large public dairies is generally unsuitable for private dairies; the object in the former case being quantity of milk, and in the latter, chiefly quality. The Ayrshire breed is, perhaps, on the whole, the best adapted for a private dairy; but, where the main objects are butter and cream, the Guernsey or Alderney cows are preferable. In order to have a supply of milk and butter from one's own dairy throughout the year, it is necessary to have at least two cows; that one may continue to give milk during the month or six weeks which the other is dry before calving; but, in situations where dairy produce can be purchased for that period, then one cow may suffice for a small family. Whoever keeps either cows or horses, must occasionally send to market, either as a purchaser or a seller; and this is commonly the part of the business in which there is most risk of being deceived. To endeavour to instruct the reader on the subject is out of the question in a work like the present; nor would it be worth any man's while to attend to instructions of this kind, even if we were to give them, unless he contemplated becoming a professional dealer or a farmer. All that we can say, that is likely to be useful, is, consult your neighbours, and employ such professional dealers to buy and sell, as you find are generally considered in the neighbourhood to be respectable. In all cases, the well-known maxim should be kept in view, viz. always to employ a man who has a character to lose.

357. *The paddock* in which the cow is to pasture, and take her exercise, may either be barely sufficient for the latter purpose, or it may be of such an extent as not only to afford pasture for the summer, but hay for winter. In the neighbourhood of London, a small cow, of either the Guernsey or Ayrshire breeds, may be kept on two acres of ground; on the supposition that the soil is good, and that for every crop of hay taken off, a dressing of manure is put on. In ordinary soils, and with less careful treatment, three acres of meadow are necessary. Whatever may be the quantity devoted to the cow, one-half of it requires to be separated from the other by a hurdle, or other fence, and mown for hay; and the portion mown, and the portion pastured, should alternate with each other. Two tons of hay, with little or no pasture or other food, will, it is calculated, keep an ordinary-sized cow a year; and, therefore, if as much mowing-ground be set apart as will produce one ton and a half of hay, there will be no want of food, even if the pasture should not be very abundant. Straw for litter, of course, must be purchased. In the case of residences where a part of the ground is under the plough, or where field crops, such as clover, lucerne, mangold wurtzel, carrots, &c., are raised by spade culture, a small cow may be kept very well on one acre of highly culti-

vated and thoroughly manured ground; a part of the clover, lucerne, or saintfoin grown on it being used green, and the remainder made into hay. In this case, also, litter must, in general, be purchased, unless the cow be accustomed to do without it; which is practicable, as was proved in the Harleyan dairy at Glasgow, though it is not, in our opinion, congenial to the animal. A substitute for straw litter may sometimes be found in gardens, in the haulm of peas and beans, and other stems and leaves which have borne crops; and in some kinds of prunings, such as the clippings of hedges, which may be dried in the summer time, and stacked for the purpose. In many gentlemen's places in the country, the leaves of the trees in the plantations are swept up when dry, and kept in an open shed for use as litter; and they not only afford a soft and elastic bed for the cow, but the best of all manure for the flower-garden. Market-gardeners and others, who are obliged to be careful of everything, save from the rot-heap all that can be dried and turned into litter, for both their horse and cow, and often do not require to purchase straw at any period of the year. It sometimes happens that the kitchen-garden belonging to a residence is too large for the present occupant; in which case the ground to spare cannot be more profitably occupied than with lucerne, to be cut green as summer food for the cow, and with carrots or mangold wurtzel for her winter food. Whichever way the food and litter for the cow may be produced, a paddock for her exercise may be considered essential. The size of this enclosure, when exercise is the main object, will depend chiefly on its shape. A square, roundish, or compact form, of limited extent, affords little temptation to the cow to reach the boundary; because it is everywhere near to her, and comparatively equidistant. If the paddock is to be square or round, therefore, it must be large. A long narrow paddock, on the contrary, in which there is a turn, or in which trees are scattered in such a manner as to conceal the farther end, may be small, as the concealment of its termination will induce the cow, every time she is turned out, to find her way thither; and this she will be the more inclined to do, if there should be a pond or a shed at the farther extremity.

358. *The soil of the paddock*, if not naturally dry, ought to be rendered thoroughly so, by both surface and under draining. Where the surface is flat, and the soil is a strong clay, such as that common in the north of London, underground drains should be introduced at regular distances all over the field; and however extravagant it may seem, they ought not to be farther apart, in many cases, than 5 or 6 feet. These drains need not be either broad or deep; and, if stones or bricks cannot be conveniently procured, they may be filled with faggot-wood from the thorn hedges. No money laid out on a wet clayey soil will pay better than that expended in forming drains. Where the soil is a clay, and not thoroughly drained, the feet of the cow will sink into it during winter, which they do much more deeply than the feet of the horse; not only because they are much smaller in proportion to the size of the animal, but from their being cloven; while the feet of the horse, being entire and larger, rest upon a greater breadth of surface. This treading on a wet surface produces what is called poaching; and, when this is the case, all that part of the surface which sinks down under the animal's feet is rendered unproductive, and the remaining part has its productiveness greatly diminished. Wherever a cow, therefore, is kept, and the field in which she is turned out to take exercise is not dry, either naturally

or artificially, during winter, it is better at that season to exercise the cow by driving her gently along a lane or quiet road; and in warm weather, by allowing her, in addition to this, to remain for some hours every day in the open yard attached to the cowhouse.

359. *Manure will always repay an occupant*, even if he should have only a single crop after it; but in this case he should take care that the manure is thoroughly decomposed, and equally and thinly distributed over the ground, so that the greater part of its nutriment may be imbibed by the plants the first season. Liquid manure is the best for this purpose; and next soot, and those manures or composts which are sold in a state of powder. Wherever a part of a residence is under grass which is to be made into hay, or even pastured by sheep or cattle, there is, in general, no mode in which the possessor can lay out money on his land to such advantage as in thickly coating the surface with stable manure. It rarely happens that the culture of arable land by a proprietor will pay its own expenses; but we know various instances, in the neighbourhood of London, where, by richly manuring grass land, and selling the growing crop every year by auction, the proprietor has obtained a good profit.

360. *The paddock may always be harmonised with the pleasure-ground* of the place, and rendered ornamental, by scattering a few trees over it; by introducing a shelter for the cow in the form of an open shed, in a proper situation; and by the judicious disposal and planting of the drinking-pond. It sometimes happens that a pond cannot be conveniently formed in a paddock, from the want of springs, or from the porosity of the surface soil being such that the rain-water cannot be collected by gutters in sufficient quantities to fill it. In this case, the usual substitute for a pond is a pump with a cistern, in some convenient part of the paddock, which may be partially concealed by bushes, or rendered ornamental as an architectural object.

361. *The trees for a paddock* may either be of the ornamental kind, or they may be the more robust-growing fruit-trees. If ornamental trees, they ought to be of such sorts as will grow freely, and soon be in a state not to require fencing; and, whether merely ornamental trees, or fruit-trees, or both are employed, they should neither be introduced in such numbers as to injure the pasture by their shade and drip, nor crowded round the drinking pond in such a manner as to discolour the water in autumn by their falling leaves. A few trees may be considered as advantageous, for affording the cow shelter and shade during rains or very hot sunshine; but, beyond a certain point, they must be considered injurious to the grass, and only allowable on account of their ornamental effect, or of the fruit that they produce. Where good healthy pasturage is the object, from half-a-dozen to a dozen trees per acre ought on no account to be exceeded; because grasses and clovers, like all other plants, to attain their greatest nutrimental value, require to have their foliage fully exposed to the direct influence of the sun, and to the free circulation of the air.

362. *Ornamental trees.*—The trees for a paddock ought to be of small size, even when fully grown; but they ought to be such as grow rapidly when young, so as to be soon out of the reach of cattle. The following kinds possess these advantages, and are, besides, ornamental in appearance :—

*A*cer Pseüdo-*P*látanus, the common sycamore.

A. macrophýllum, the Californian maple.

A. rùbrum, the red maple.

A. eriocárpum, Sir Charles Wager's maple.
Negúndo fraxinifólium, the ash-leaved box elder.
Æ'sculus rubicúnda, the scarlet horsechestnut.
Cytisus alpìnus, the Scotch laburnum.
Robínia Pseùd-*Acàcia*, the common false acacia, or American locust.
Gleditschia triacánthos, the honey locust, or thorny acacia.
Cratæ'gus coccínea, punctàta, Crús-gálli, Arònia, tanacetifólia, and orientàlis, different kinds of thorns.
Amelánchier vulgàris, the common amelanchier.
A. Botryàpium, the snowy mespilus.
Méspilus germánica and *M. Smithii*, medlars.
Pyrus spectábilis, Chinese crab.
P. A'ria, *P.* vestìta, *P.* pinnatífida, white beam trees.
P. aucupària, the mountain ash.
P. Sórbus, the true service.
Tília europæ'a álba, the Hungarian lime.
O'rnus europæ'a, the flowering ash.
Quércus Cérris Lucombeàna, the Lucombe oak.
Q. I'lex, the evergreen oak.
Platánus orientàlis, the Eastern plane tree.
Sàlix álba, Russellìàna, vitellìna, amygdálina, and frágilis, tree willows.
Pópulus nìgra, monilífera, and canadénsis.
A'lnus glutinòsa laciniàta, cut-leaved alder.
A. cordifòlia, heart-leaved alder.
A. incàna, the hoary-leaved alder.
Taxòdium dístichum, the deciduous cypress.
Bétula álba and *B. nìgra*, birches, &c.

The last fourteen trees, to which may be added the weeping willow, are adapted for planting in the neighbourhood of the drinking pond.

If any pines and firs are desired, the Pinaster and *Pinus Laricio* are the best.

363. *Fruit Trees.*—The following selection has been made with the approbation of Mr. Thompson, of the Horticultural Society's Garden, as ornamental in the shape of the tree, and of vigorous growth as standards:

Apples and Crabs.

The Red Astrachan. The tree is middle-sized, with a branchy head; the fruit is of a bright red, with a fine bloom, like that of a plum.

The White Astrachan, or Transparent Crab of Moscow. The tree resembles the preceding sort, but has the branches tending upwards when young, and afterwards becoming pendulous. The fruit is of a wax colour, with a fine bloom on it, and is almost transparent. It is known in English nurseries under the name of transparent crab.

The Lincolnshire Holland Pippin is remarkable for the large size and high colour of its blossoms. Its fruit keeps till February.

The Tulip Apple is a great bearer of very bright red fruit.

The Violet Apple has fruit of a violet colour, covered with a bloom, like that of the plum.

The Cherry Crab is a subvariety of the Siberian crab. The tree is spreading, with drooping branches; and the fruit is numerous, and about the size and colour of a cherry.

The Supreme Crab has larger fruit than the cherry crab. The tree is of robust growth, and the branches are somewhat erect.

Biggs's Everlasting Crab is a vigorous-growing tree, with pendulous branches, and abundance of fruit, which, in form and character, are intermediate between the plum-leaved Siberian crab, and the common Siberian crab, and which remain on the trees long after Christmas. In sheltered situations, and mild winters, this tree appears almost a subevergreen.

Pears.

Beurré Diel. Leaves large and flowers very large. A hardy tree, somewhat fastigiate in its shape; a great bearer, and deserving of extensive cultivation on account of its fruit, independently altogether of its handsome shape and large flowers.

Beurré de Ranz (not Beurré rance, as commonly written, which means rank or rancid). Branches spreading or pendulous. The best very late pear yet known. It bears very well as a standard.

Nelis d'Hiver. Branches slender and somewhat wavy. Flowers very abundant. Leaves narrow-elliptic, more so perhaps than in any other cultivated variety of the pear; and they make so little appearance when unfolding, that the whiteness of the blossom is almost untinged by them.

Glout Morceau. Branches spreading. Head pyramidal. A hardy tree, and a great bearer; the fruit of most excellent flavour, and hanging late on the tree. A tree in our garden at Bayswater, the trunk of which is covered with ivy, is loaded with fruit almost every year, without any care or attention whatever being bestowed upon it

Napoleon. Leaves broad and shining. Blossoms large. The tree vigorous, and a good bearer. The fruit excellent

Swan's Egg. A handsome pyramidal tree, and an excellent bearer; the fruit roundish or obovate. This is one of the commonest pear-trees in the market-gardens about London; and we have introduced the name here from having ourselves observed the handsome shapes taken by the trees. The fruit, however, as compared with that of the sorts above recommended by Mr. Thompson, is not worth cultivating; though, in the months of November and December, it is more abundant in the London markets than that of any other variety.

The following Scotch Pears are recommended by Mr. Gorrie, as forms adapted for landscape scenery; but little can be said in favour of their fruit, as compared with that of the new Flemish varieties:—

The Benvie, the Golden Knap, and the Elcho take fastigiate forms; the latter, more especially, Mr. Gorrie says, may be called the Lombardy poplar of the pear tribe. These trees generally attain the height of from 45 ft. to 50 ft. in as many years, in the Carse of Gowrie, in Perthshire.

The Busked Lady and *Pow Meg* take spreading orbiculate forms, such as will assort with the Acer Pseudo-Platanus, and may be called the oaks and elms of the pear family.

Cherries.—Those recommended by Mr. Thompson are:

The Bigarreau, a tree of vigorous growth, with large pale green leaves, and stout divergent branches.

Büttner's Yellow, a vigorous-growing tree, like the preceding, but with golden-coloured fruit.

The Kentish Cherry is a round-headed tree, with slender shoots, somewhat pendulous.

The May Duke is a middle-sized tree, with an erect fastigiate head.

The Morello is a low tree, with a spreading head, somewhat pendulous; most prolific in flowers and fruit, the latter ripens very late; and, from not being so readily eaten by birds as most other sorts, hangs on the trees a long time. In this last respect, however, it is now exceeded by Büttner's October Morello.

Plums.—The handsomest-growing trees, Mr. Thompson considers to be:

The Red Magnum Bonum, which has a fastigiate habit of growth, and a trunk sufficiently vigorous to bear the rubbing of cattle without injury.

The Washington, a vigorous-growing tree, with a pyramidal head; and a great bearer of fruit of excellent quality.

The Green Gage, in the climate of London, forms a handsome tree; and, at a certain age, becomes a great bearer.

The Orleans is a vigorous-growing, handsome, spreading tree, producing very excellent fruit.

The Wheat Plum is a very ornamental tree when in fruit, that being of a bright fiery red colour.

The Damson, and the Wine Sour Plum are vigorous-growing trees, quite hardy, very prolific both of flowers and fruit, which fruit is particularly well adapted for all culinary purposes.

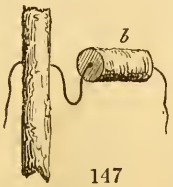
Walnuts and Sweet Chestnuts.

The paddock would seem a very appropriate place for walnut-trees; and every residence ought to contain one or two of these trees, for the sake of their green fruit for pickling, and their ripe fruit for the dessert; but more than two or three should not be planted in a paddock, unless it be very large; because their leaves, when eaten by cows, give a bad taste to the milk, and, when they drop into the pond, make the water bitter. The same objection does not apply to chestnut-trees, one or two of which may be introduced for their fruit. The Downton and the Madeira chestnuts are recommended by Mr. Thompson; the latter has a large oblong nut.

364. *Staking and protecting single trees in paddocks.*—Plants should be selected

which have clear stems, at least 6 ft. in height: they should be planted on little hillocks, if the ground is at all damp; and staked and protected from the rubbing of the cow. One of the best modes of doing this is that invented by Charles Lawrence, Esq., and explained in *figs.* 147. to 149. The advantages which this guard has over all others, Mr. Lawrence finds to be, "free motion to the tree, without producing any friction on the bark; perfect security against the attacks of cattle; durability, cheapness, and neatness in appearance." Those guards which confine the tree are objectionable from preventing the motion of its stem, which is essential to its health and growth; and those which stand at a distance from the tree, consisting of three or four posts connected by horizontal spars, are very injurious to the bark in high winds, and are, besides, very expensive and unsightly. The following are Mr. Lawrence's directions for preparing and putting up his tree-guard:—

Mr. Lawrence's tree-guard against horned cattle.—"Procure stakes of ash or larch, or, in default of these, of any other straight-growing tree, when thinning young plantations, or cutting down coppice. These stakes should be 6 ft. in length, or more if requisite, and about 2 in. in diameter at the thickest end; and they should have holes drilled through them at the top and bottom, about 1 ft. from each end. Get a similar hole drilled 2 or 3 inches up the centre of a stake, and then saw off the length which has had the hole drilled through it, and which will give a piece that, when the string or wire is drawn through it, will resemble *b* in *fig.* 147. Repeat the operation till as many pieces are drilled and sawn off as may be wanted. Pass a strong piece of copper, or Rowland's metallic wire, or thick tarred string, through one stake by the hole at the top, and then through one of the 2-inch pieces, then through another stake, and so on, separating each stake at top and bottom by one of the 2-inch pieces of wood, until you have enough to surround your tree loosely, leaving plenty of space for growth. When this is done, the appearance of the guard, before being put on, will be as in *fig.* 148. Place the guard thus formed round the tree, and fasten the ends of the wire or string. The guard is much the same as the cradle put round the neck of a blistered horse, to prevent his gnawing the irritated part. The ends of the stakes merely rest on the ground, and they should be cut quite flat at the bottom, to prevent their sticking in it. At the upper end, they should have a sharp slanting cut with a bill-hook, to throw off the rain. The motion of the tree will not be in any degree impeded; and the bark cannot be injured, let the wind blow as it may, for the guard moves freely with the tree in every direction. If a tree is growing rapidly, it will want room before the guard requires renewing; in which case it is only necessary to untie the string or wire at the top and bottom, lengthen the string or wire by tying a piece to it, and introduce an extra rod, and two extra separating pieces. As a principal feature in this guard is that the tree is left quite at liberty to be blown about by the wind in every direction, of course it does not obviate the necessity of staking a newly planted tree until it becomes fairly rooted."



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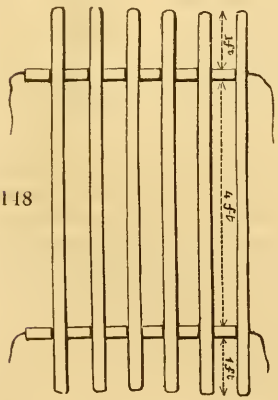

148

"I can vouch," says Mr. Lawrence, "for this guard affording perfect protection against cattle; for I had two cows, the most determined barkers of trees I ever met with, in a paddock in which there were several single trees. They had, sooner or later, contrived to get at my trees, and ruin them; and I was about to fatten them off, and condemn them to death for their offences, when I hit upon the mode of protection just described. My men and myself were curious to see the impression that would be made on the cows by the new

guards when they were first turned into the paddock. They very soon proceeded to the trees, examined the cradles round them, and made several attempts with their mouths. Finding these unsuccessful, they made an attack with their horns; but, as the fence yielded with every blow, and merely turned round, they made no progress that way. Thereupon they began stamping with their feet, and, as we thought, from sheer vexation and disappointment. Be this as it may, they were completely defeated, and my trees have now continued several years in perfect security, though these identical cows have remained amongst them till this day. One man can fence in this way a great many trees in a day; and the cost of stakes, if purchased, would not exceed that of one of the posts necessary upon the ordinary plan." (*Gard. Mag.*, xiii., p. 167.)

149

Fig. 149. shows, on a larger scale, the ground plan, or rather horizontal section 1 ft. from the ground, and a portion of the elevation of a tree so fenced. In this figure the wire or string is shown passing through the upright rods and horizontal short pieces, from *c* by *d* to *e*; but, from *c* by *f* to *e*, the wires are only shown passing through the upright rods; the short pieces being seen in vertical profile, as they are in nature.

Protecting by Thorns.—The mode of protecting trees from horned cattle which we consider next best to that of Mr. Lawrence is, to clothe their stems with thorn bushes, as shown in *fig.* 150.; a mode very generally adopted in the public parks about the metropolis. The branches are tied on with copper wire, and are loosened or renewed every two or three years.

150

Protecting trees against Sheep. A mode of protecting the stems of trees somewhat similar to that of Mr. Lawrence, and which has been long practised in Scotland, consists in tying plasterer's laths, set on end, and touching each other at their edges, round the trunks or stems; but this mode is better adapted for protecting trees from sheep than from horned cattle. Where sheep only are grazed, no mode can be cheaper, or, after the laths have been exposed to the air for a year, less conspicuous, unless we were to substitute for the laths, oak, birch, or willow bark, with the epidermis outwards. Where laths or strips of thin boards are used, they, and also the string by which they are tied on, might be rendered of great durability by being previously Kyanised, or steeped in Margary's composition, which is said to cost only one-tenth of Kyan's process, and to be equally efficacious both on wood and cordage.

151

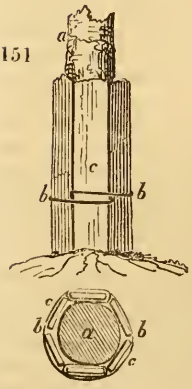

Fig. 151. shows the horizontal section, and elevation of a tree thus protected, in which *a* represents the stem of the tree, *b* the wire which ties on the laths, and *c* the lower ends of the laths. Trees protected in this manner may be easily named by nailing on the laths a label with the name of the tree, and the date of planting it, as shown in *fig.* 152.

152

Quércus Cérris.
1850.

Staking trees to protect them against the wind.—When single trees are planted which have large heads in proportion to their roots; or, when the situation in which they are placed is very much exposed, they are in danger of being blown off the perpendicular, or even thrown down, by high winds. This is more especially the case when the trees are planted, as we recommend, on little hillocks; and this is one reason why planters have been led to deep planting, or, at all events, to prefer a flat surface to a raised one. To retain a tree fast in its place that has but few ramose roots, fix previously in an upright position, in the bottom of the pit, a stake of such a length that it may be rendered firm by ramming, &c., below the level of the soil which is to contain the roots of the tree, and that it may reach 3 or 4 feet up the stem above ground; afterwards tie the stem of the tree to this stake, as shown in *fig.* 153.; or, notch two short pieces of wood into each other, so as to form a cross; and at one of the angles of intersection fix a stake, to which the tree is to be tied, as in *fig.* 154. No wind whatever will blow down a tree thus supported, provided the arms of the cross are long and strong. In order to give additional strength, the arms of the cross may be pegged down with hooked sticks. Another mode consists in tying the tree to two stakes in contact with the trunk, and deeply inserted in the soil, as shown in *fig.* 155.; and

153

154

155

the third mode we shall here mention, consists in strengthening the ramose roots of a tree by tying them to pieces of branches laid on them, and in close contact with them, throughout their length, as shown in *fig.* 156.; thus producing, in effect, large, strong, and powerful roots, to act as levers to keep the trunk in its place. After one of these methods of fixing the tree has been adopted, it may be protected from cattle or sheep by Mr. Lawrence's mode, by clothing with thorns, or by a covering of laths, as already described.

156

Mr. Taylor's mode of securing trees from the effects of wind.—Mr. Samuel Taylor, of Whittington, Stoke Ferry, finding that all his newly planted trees, from their great exposure to a strong westerly wind, bent their heads in a contrary direction, as shown in *fig.* 157., to keep them upright, he tried stakes and haybands, which, though firm at first, he soon found of no avail; and becoming soon, as he says, "as much chafed as his trees," he had recourse to cords, by which he tied the head of the tree to the stakes, as shown in *fig.* 158. These cords answered so well that, afterwards, he dispensed with the expensive apparatus of stakes, and tied the head down by cords only attached to pieces of wood driven into the ground, as shown in *fig.* 159.

157

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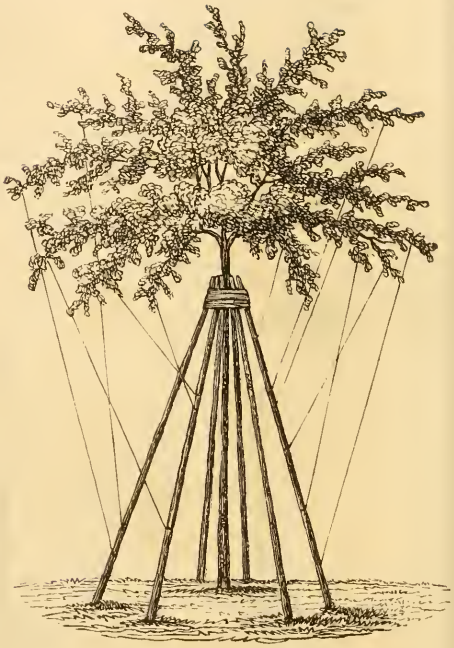

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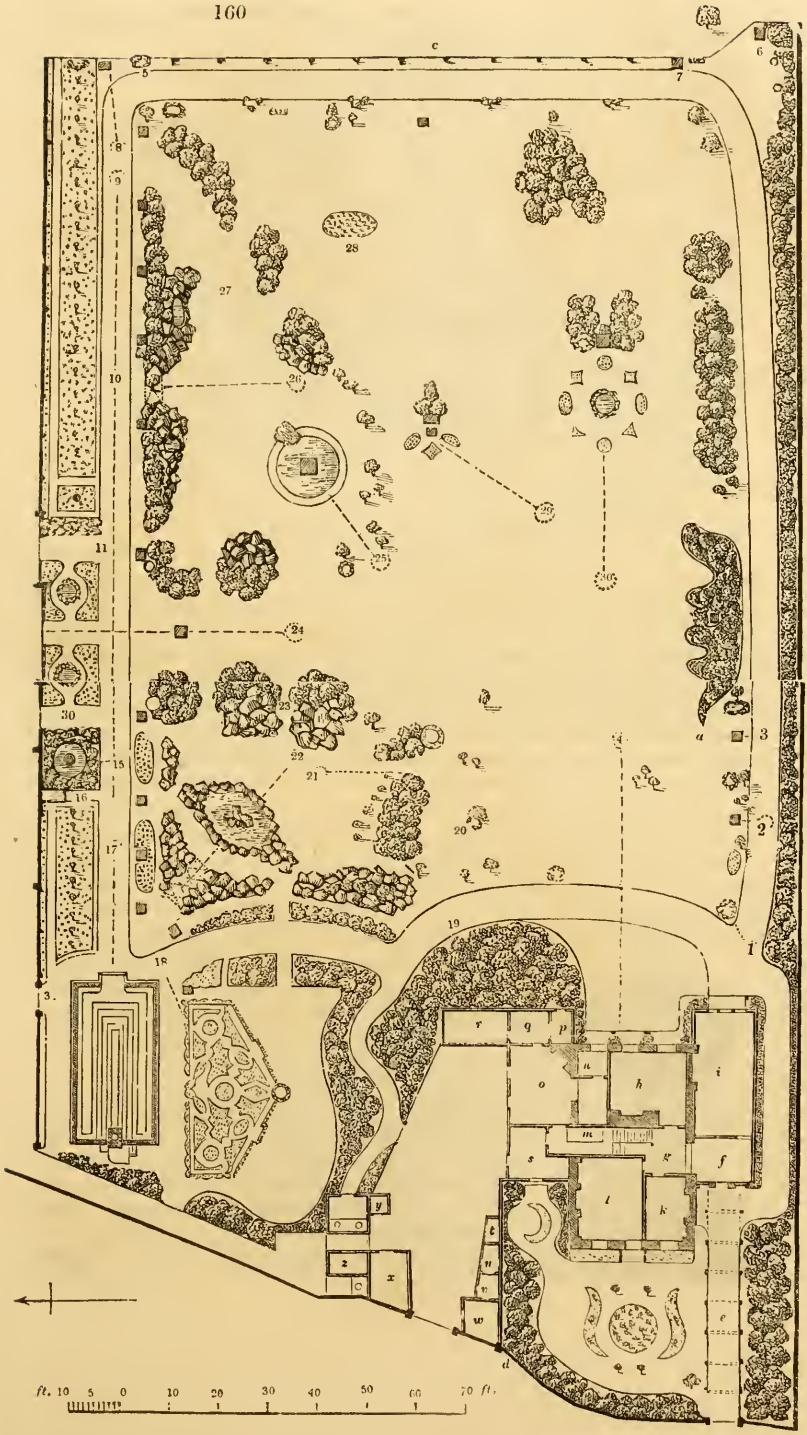


DESIGN XXII.—*Plan and Description of the Villa formerly occupied by Mrs. Lawrence at Drayton Green.*

365. *Ground plan, &c.—Fig.* 160. shows the general arrangement of the house and grounds; and the following are the details:

d, Village lane.
e, Entrance to the house under a covered way; at the end of which, on each side of the hall door, is a niche, with a statue.
f, Entrance lobby.
g, Hall and staircase.
h, Drawing-room, opening under a veranda to the lawn.
i, Dining-room, opening into the garden walk.
k, Boudoir, or morning room.
l, Breakfast-room and library, one of the windows opening to the front garden, which is ornamented with a border, and beds of low-growing peat-earth shrubs, intermixed with spring-flowering bulbs and standard roses.
m, Store closet under the staircase.
n, French wine cellar, entered through the ale and spirit cellar; from which there are stairs leading to the wine-cellar below.
o, Kitchen. *p*, Butler's pantry.
q, Back kitchen, serving also as a scullery to the dairy.
r, Dairy.
s, Housekeeper's room.
t, Dust-bin.
u, Cinder-bin.
v, Bin for refuse which cannot be burned or turned into manure.
w, Coal-house.
x, Lumber-house for bottles, hampers, &c.
y, Knife-house; adjoining which is a privy for the family
z, Wood-house, adjoining which is a privy for the servants

366. *General observations.*—This villa may be said to occupy in all about twenty-eight acres. The house, stable offices, and decorated grounds, stand on about two acres; and at the distance of about two or three hundred yards, across the road, are the kitchen-garden, poultry-houses, and piggeries, occupying nearly two acres; and two pasture fields, containing twenty-four acres. The ornamented grounds have an even surface, which has the disadvantage of rising somewhat from the house to the further extremity of the lawn. It is bounded on the south by another villa of the same kind; and on the north and east by grass fields. The disadvantage of the ground sloping to the house is counteracted, by lowering the walk that crosses immediately in front of the house, and sloping the ground from the drawing-room veranda to that walk; beyond which the lawn rises gently and gradually, till, at the cross walk at the farther extremity, it is probably 6 ft. higher than the level of the drawing-room floor. Though, when the lawn rises in this manner from the house, it detracts from the expression of dignity, considering the villa as a whole, yet, viewing the lawn as an arena for the display of plants, statues, and other interesting objects, from the windows of the drawing-room, it has an advantage in that point of view over a falling surface: it is also well sometimes to have a lawn of this kind, in order to produce variety.

161

367. *Description of the grounds.*—

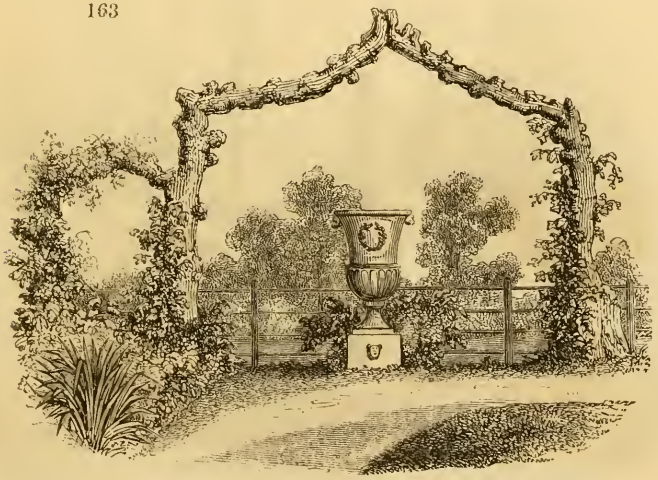
Entering the lawn from the drawing-room (*h*), we find a gentle descent from the veranda to the walk. Turning to the right, at the angle at 1, we observe the foliated vase *fig.* 161., the base of which is concealed by a plant of tree ivy; proceeding onwards towards 2, and 4, we pass two ornamental pedestals and vases. We are now at a sufficient distance from the garden front of the house, to see it to advantage by turning round; and, if we step on the lawn to the point 4, we shall find the view *fig.* 162., to the left

162

of which will be observed the ivy vase, and a basket containing a pyramid of roses; and to the right an elevated rustic basket of pelargoniums. The large window on the left is that of the dining-room.

The margin of plantation on the right is composed partly of evergreen trees and shrubs and partly of deciduous flowering kinds. The groups on the left hand are, in part, of more rare sorts, and contain a great many fine hybrid rhododendrons and azaleas. All these plantations and groups are treated in the picturesque manner; there being scarcely anything in these grounds, except the single plants, such as the standard roses, and some rhododendrons and other shrubs, which can be considered as treated in the gardenesque style of culture.

163



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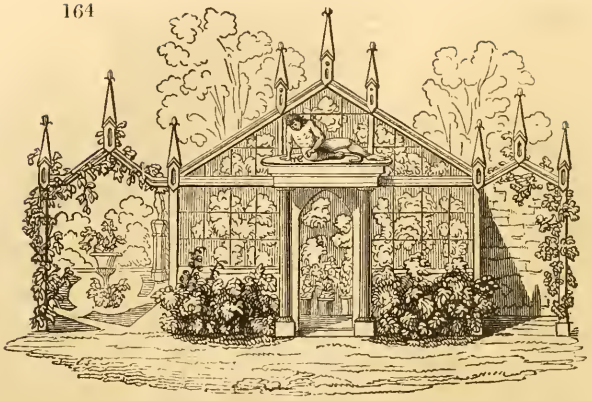

At 5, there is a fine specimen of double-blossomed furze, and at 6, a vase on an elevated pedestal. The walk from 5 to 7 is several feet higher than the floor of the veranda in the front of the drawing-room; and hence the views towards the house, being along a descent, are less interesting than they otherwise would be. The view into the paddock, to the right, consists of a plain grass field, grazed by some fine Alderney cows, and planted with two or three scattered elms, oaks, and aspens and other poplars.

The next scene of interest is the Italian walk (see *fig.* 93. in p. 182.), arrived at the point 8, in which, and looking back towards the paddock, we have, as a termination to one end of that walk, the rustic arch and vase *fig.* 163. From the point 9, we have the view of the Italian walk, with a span-roofed green-house as the termination at the farther end, and a fountain on the right hand. The border on the left is planted with the most choice herbaceous flowers, interspersed with standard roses at regular distances; and the wall is devoted

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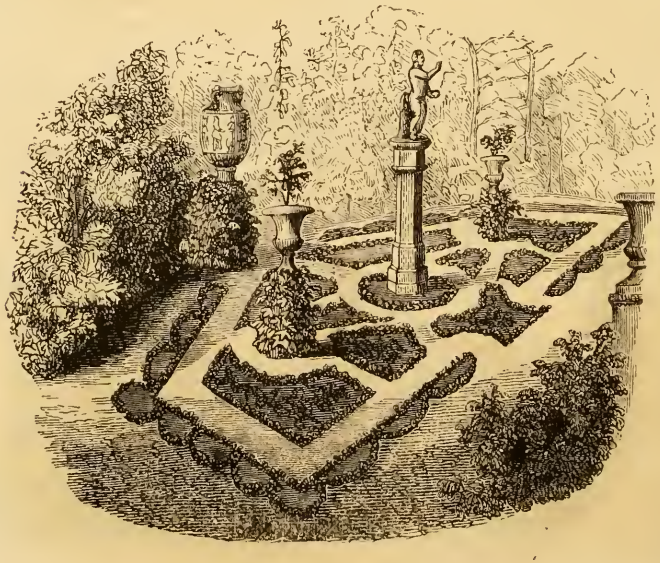


in part to the finer fruits, but principally to climbing roses, and other climbing or twining shrubs of fragrance or beauty. At the point 10, there is a rustic archway of rockwork on the right, from which an interesting view across the lawn is obtained. At the point 11. there is a walk across the border to the bath-house, adjoining which is a camellia-house 12, (see *fig.* 169. in p. 274.;) and beyond that two long sheds, 13, 14 (see *fig.* 169.), for tools, pots, &c. At 15 there is a fountain, and at 16 a stone cistern filled with water by a forcing-pump in the stable-yard. At 17 there is a span-roofed green-house (*fig.* 164.), and at 18, the French parterre shown in *fig.* 165.

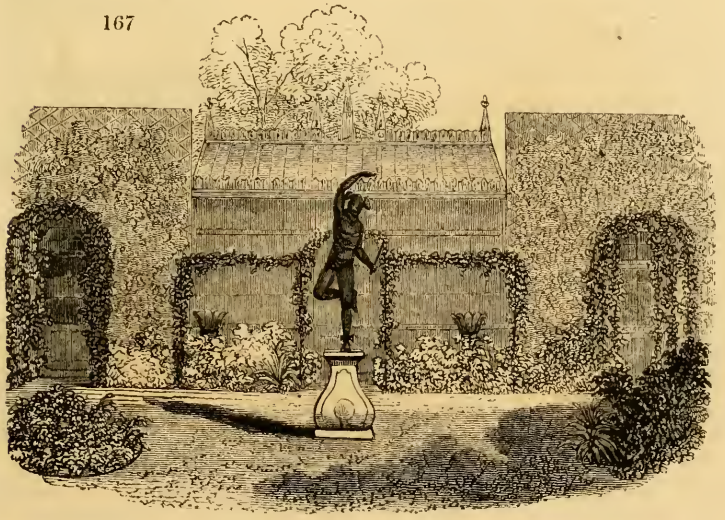
Proceeding towards the house, a view of a handsome weeping ash (20) is obtained from the point at 19; and, at the farther extremity of the walk, the vases placed at 1, 2, 3 on the plan have an excellent effect, backed by the marginal plantation of evergreens. Leaving the walk at 19, and passing the weeping ash at 20, if we advance on the lawn to 21, and look towards the south, we have the pollard vista *fig.* 166.; and changing the position to 22, we have a view of some rockwork, with a statue of Fame, &c.

166

On the right and left of 23 are two groups of rockwork, with concealed springs, which drop from rock to rock, and from stone to stone, and form curious little moist places for aquatic plants. Advancing to 24, and looking northwards, we have the statue of Mercury in the foreground, and behind it the camellia-house, the wall on each side of which is heightened with trellis-work for creepers, as shown in *fig.* 167.

At 25, we have the view of the fountain and arch behind, shown in *fig.* 91. in p. 181. In the basin are nymphæas and other aquatics; and on one side is a Napoleon willow.

167



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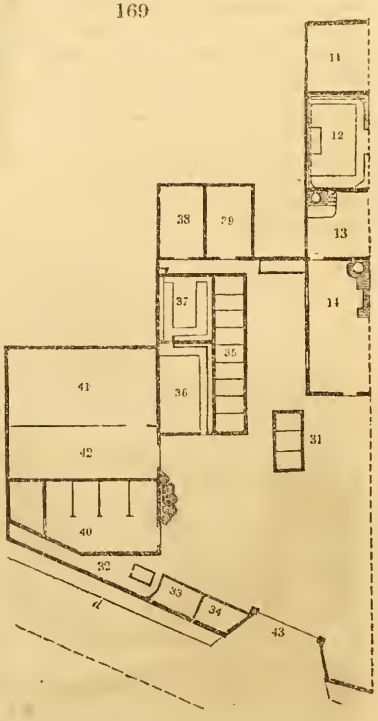
At 26, we have the view of the rustic arch and Cupid, shown in *fig.* 168.; and, at 27, a tent is frequently pitched in the summer time.

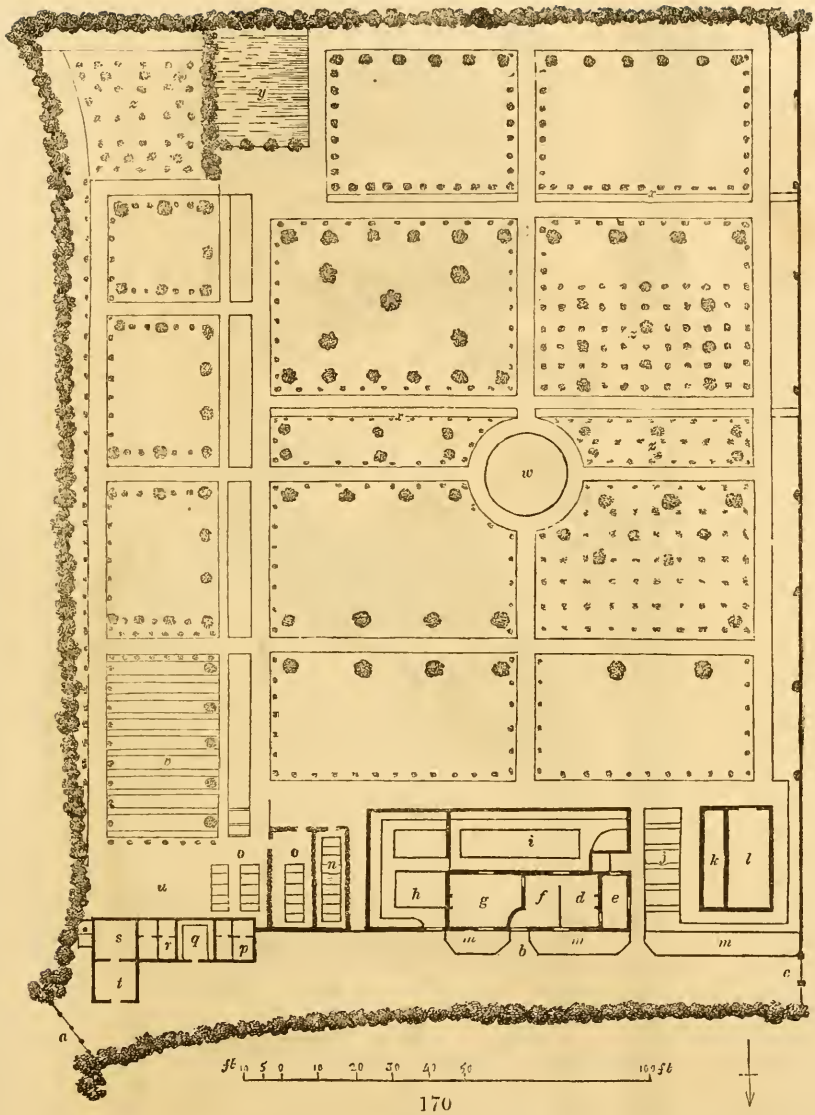
At 28, there is a bed of *Rosa indica*, in the centre of which is a large plant of *Yucca* gloriosa; and, proceeding across the lawn to 29, we have a view of a flower-garden; and, at 30, we have a fountain, surrounded by baskets of flowers, with the two guardian nymphs.

We shall now suppose that the spectator walks across the lawn, and, passing the span-roofed green-house, enters the court of offices by the door at 30. In this court (*fig.* 169.) he finds:—

169



31. A large pit for plants.
32. A small pit.
33. Dung-pit for the stable.
34. Rubbish-pit, and rot-heap for the garden.
35. Pit for heaths.
36. Green-house.
37. Dry stove.
38. Shed for flower-pots.
39. Rubbish-shed
40. Four-stalled stable, with hay bin at the farther end.
41. Coach-houses, harness-room, and sleeping-room for coachman.
42. Place for plants in pots that have done flowering.
43. Carriage entrance from lane.



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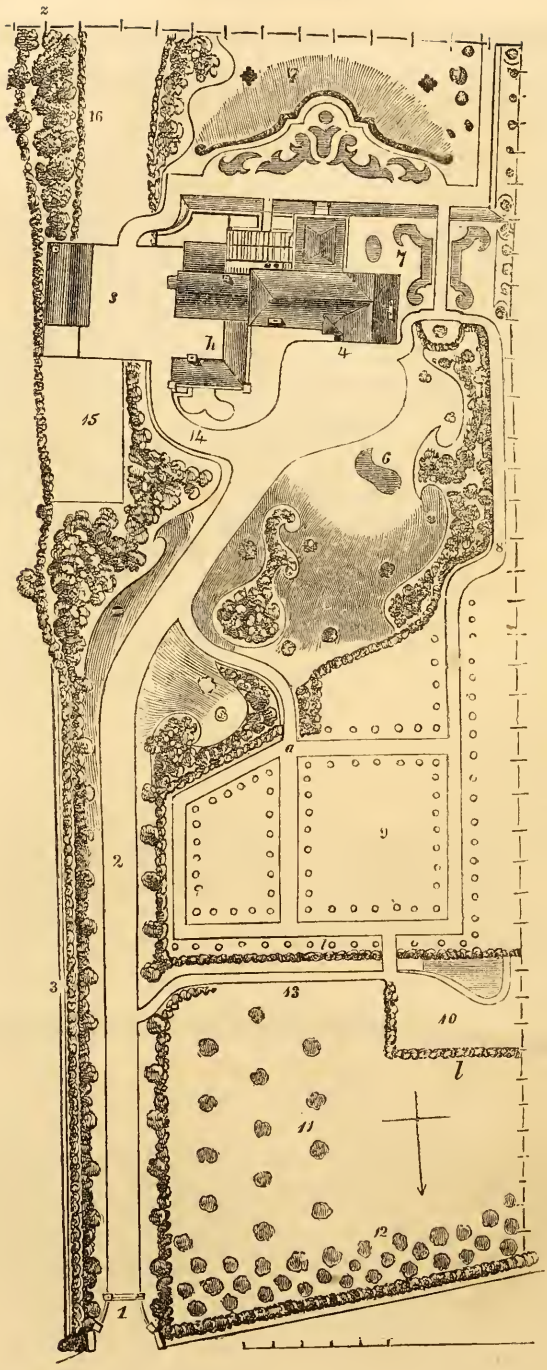
368. *The kitchen-garden*, the gardener's house, the stove, and the poultry-houses, grass fields, and cow-shed, are situated on the other side of the lane, and at the distance of 100 yards from it. These are shown in the plan *fig.* 170., and an explanation of the references is given in pp. 277. and 278.

369. *Kitchen garden, and reserve ground.*—The references to the plan, *fig.* 170., are given in pp. 277. and 278.

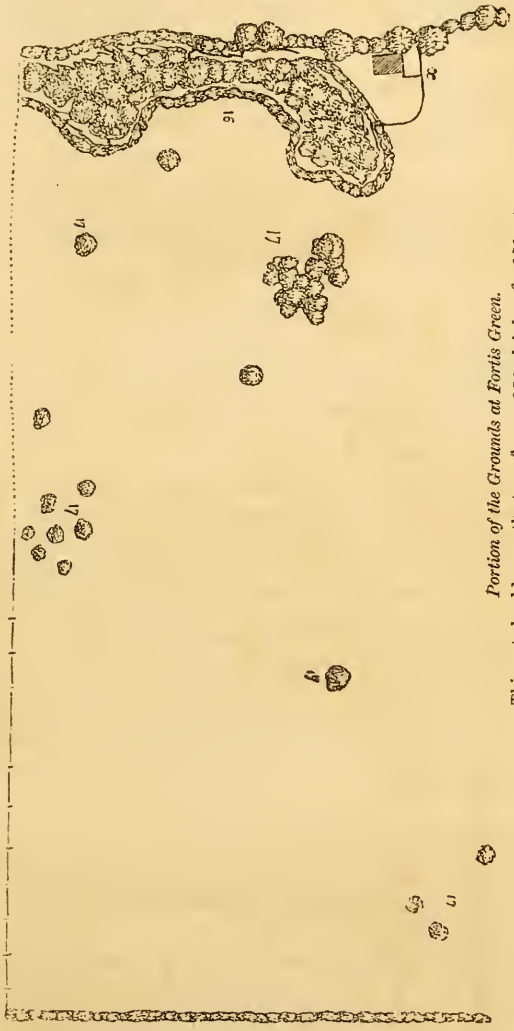
171



Plan of the Grounds at Fortis Green.

This sketch represents the narrow portion next the public road. *Fig.* 172. in p. 277. is a continuation of the plan; and, had our space permitted, should have crossed the present page at the top, uniting the shrubbery 16 at *z*.

172



Portion of the Grounds at Fortis Green.

This cut should cross the top of page 276., joining *fig.* 171. at *a*.

[References to *fig.* 170. in p. 275]

a, Entrance gates.
b, Entrance to the gardener's house.
c, Entrance to the cow-field, in which the cow shed is placed
d, Kitchen.
e, Wash-house, or back kitchen.
f, Gardener's sitting-room.
g, Apartment divided into two bedrooms.
h, Stove, heated by hot water.

i, Orchidaceous house, with miniature rockworks and artificial hillocks, for terrestrial Orchídeæ; and small basins and fountains, formed of shellwork, for aquatics.
j, Beds of reserve flowers.
k, Cold-pit.
l, Span-roofed green-house.
m m, Children's gardens.
n, Situation for a hot-bed, surrounded by a privet hedge, 18 in. high.
o, Compost and frame ground.
p, Two pigsties.
q, Poultry-house, with pigeon-house over. This house has a span roof, with a gable end over the door; and the triangular part of the gable end has four rows of holes for the pigeons, the rows having narrow shelves in front for the pigeons to rest on, and an enclosed space behind, 3 ft. in depth, for the nests.
r, Two other pigsties.
s, Rabbit-house.
t, Tool-house, in which, also, the ducks are kept.
u, Frame-ground.
v, Asparagus-beds.
w, Circle of grass where a tent may be fixed, for eating fruit in during the summer season.
x x, Open drains, the soil of the garden being a retentive clay.
y, Pond.
z, Fruit trees and fruit shrubs.

370. *Remarks.*—The principal feature in this place, while it was in the occupation of Mrs. Lawrence, was its profusion of ornament; and its principal fault, its total want of repose. In the summer season especially, the brilliancy of the flowers, the immense number of statues and vases, and the sparkling waters of the various cascades, produced an effect perfectly dazzling.

Design XXIII.—*Plan and Description of Fortis Green, Muswell Hill, with a small Sheep-farm attached.*

371. *Ground plan, &c.*—This villa, which was laid out, planted, and formerly occupied by W. A. Nesfield, Esq., landscape gardener, is in a more retired situation than is generally to be met with in the neighbourhood of London. *Figs.* 171. and 172. (pp. 276., 277.) show the ground plan, of which the following are the details:

1, Entrance by a close gate, 6 ft. 6 in. high.
2, Avenue of sycamores, bounded on each side by a laurel hedge cut nearly perpendicular, like a clipped hedge, and allowed to be high enough to screen the kitchen-garden, &c. There are other laurel hedges in the kitchen-garden marked *l*.
3, Boundary, consisting of a quick fence and ditch.
4, Entrance front of the house.
5, Lawn, which descends very rapidly to the flat surface upon which is placed the house. In consequence of the frontage being so long and narrow, it was impossible to place the house upon the level (i. e. where the lawn is separated from the kitchen-garden), because the south view, which is extremely desirable, would have been contracted to nearly half the width which is now seen; and, as the kitchen-garden and other requisites would have destroyed the character of the view from the south, which now in itself assumes the appearance of a park-like field, there was no alternative, but that of adopting the different sites indicated on the plan, for the flower-garden, kitchen-garden, &c.; particularly as there is no view northwards. The objection, therefore, of descending to the carriage-sweep in front of the house, is accounted for.
6, Dug ground, containing a variety of ornamental trees and shrubs: the margins are devoted to low flowering shrubs, &c.
7, Flower-garden, upon two levels.
8, Walk connecting the kitchen-garden with the flower-garden, along a row of lime trees.

9, Kitchen-garden, having a holly hedge from the gardener's entrance (*a*) to the yew hedge near the corner of the house (*b*); the remaining hedges are all common laurel.
10, Melon-ground and pond.
11, Orchard, and potato and mangold wurzel ground, &c.
12, Belt of spruce and Scotch firs.
13, Gardener's communication with the public road, when manure and other materials for the gardens are wanted to be brought in.
14, Approach to the stable-yard.
15, Grass drying-ground, on a lower level than the approach, and screened by a dense mass of evergreens, &c.
h, House-yard. *s*, Stable-yard.
16, in *figs.* 171. and 172., Boundary plantation, fenced towards the field with furze (kept clipped), concealing from the flower-garden a sheep-hut and little stack-yard (*x*).
17, in *fig.* 172., Groups of thorns and other trees.

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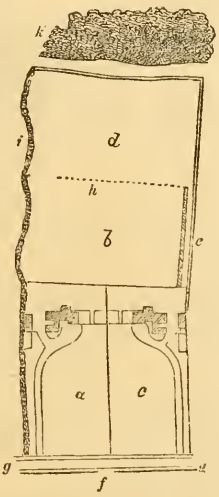

The frontage of the villa adjoining Mr. Nesfield's at *c* in *fig.* 173. is the same size as his own; and, as both places were built by the same architect (A. Salvin, Esq., Mr. Nesfield's brother-in-law), and laid out at the same time, care was taken that where the ground was planted thickly in one villa, it was planted thinly in the other, and *vice versâ;* so that each villa might aid the other in producing its general effect, and in sacrificing as little ground as possible in planting. The field belonging to Mr. Nesfield embraces the frontage of both houses; and the land attached to both, being 8¼ acres, is subdivided as shown in *fig.* 173. In this figure, *a b* show the land occupied by Mr. Nesfield, and containing in all 4¼ acres, *a* being that part which comprises the house, kitchen-garden, &c., and *b* being the grass field; *c* is the house and garden of the adjoining occupier; and *d* his grass field, to which he has access by the road *e*; *f* is the public road, and *g g* are the entrance-gates to the two houses. This arrangement (on purchasing the land) was made in order that each house might enjoy the effect of space as much as possible, and, by dividing the ground with the wire fence (*h*), which is scarcely visible from either house, the breadth of effect is not cut up, as it would have been, had the division been made longitudinally. The boundary hedge (*i*) winds considerably, and there are several very fine trees in it, which, in consequence of the winding, group most admirably, as shown in the view, *fig.* 174. The wood at *k*, in *fig.* 173., belongs to the Earl of Mansfield's grounds, at Kenwood, and, together with the spire of Highgate church, adds greatly to the beauty of the landscape, as shown in the view above referred to (*fig.* 174.)

Fig. 175., p. 282., is a ground plan of Mr. Nesfield's house and flower-garden on a larger scale.

a, Drawing-room. *aa*, Green-house. *b*, Dining-room.
c, Passage. *d*, Staircase. *e*, Porch. *f*, Closet.
g, Way to cellar, from kitchen and glass closet. *h*, Kitchen.
i, Scullery. *k*, Stairs to servants' rooms. *l*, Laundry.
m, Store-room. *n*, Tool-house, at the end of which is the stoke-hole to the green-house. *o*, Passage to the yard. *p*, Larder. *q*, Coal-hole.

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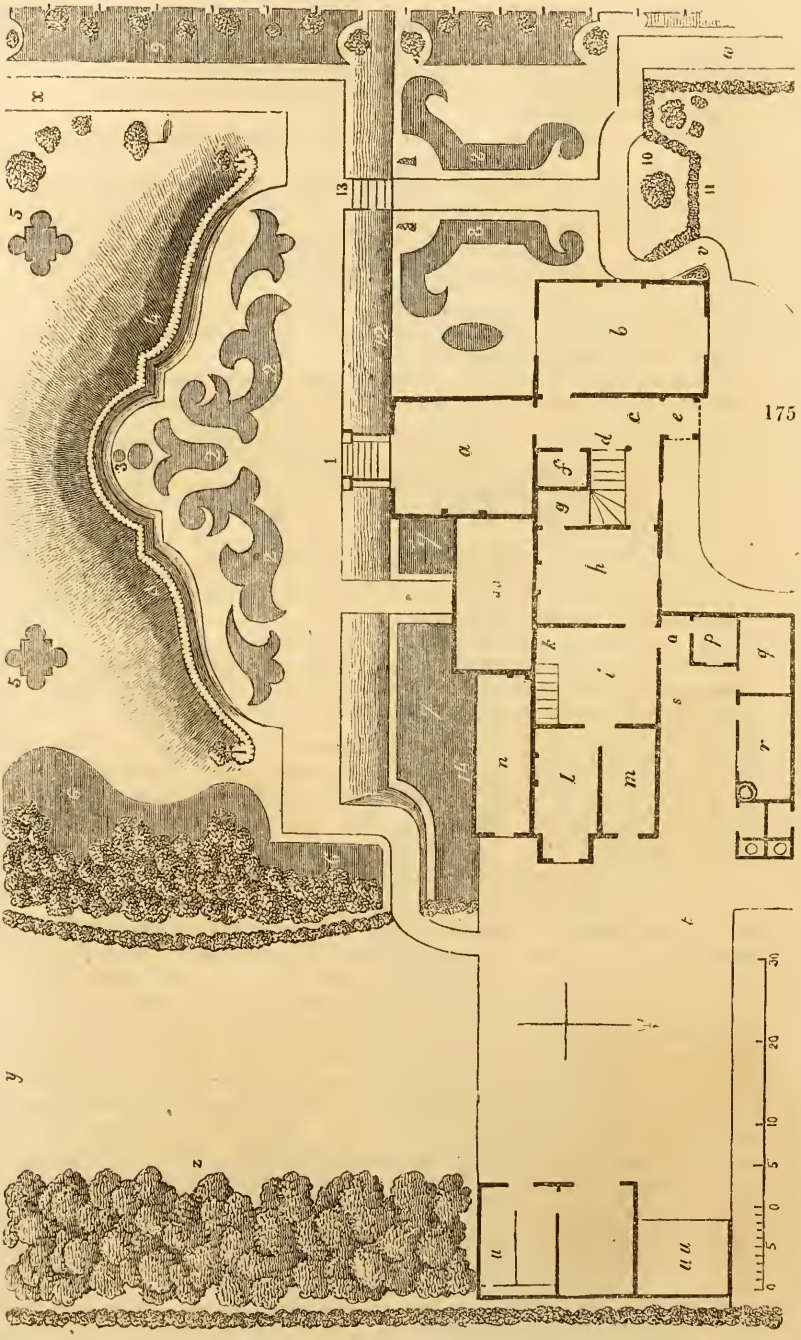
r, Wash house. *s*, Pump. *t*, Yard. *u*, Stable.
uu, Dung-pit *v*, Walk from the entrance-front to the flower-garden.
w, Walk connecting the kitchen-garden with the flower-garden.
x, Gate in the wire fence which separates the flower-garden from the field.
y, Entrance to the field, from a small paddock communicating with the stable-yard.
z, Shrubbery, and boundary fence.
1, Steps from the drawing-room. 2, Beds for low flowers, on gravel, and edged with box. 3, Aloe-tub
4, A mound, raised 18 in., having its interior slope as steep as it will stand (that is, with a base of 2 ft.). Upon the top is a hedge of dwarf China roses, jasmines, and sweetbriars, kept 18 in. high, and terminating in each end in a small circle, out of the centre of which rises a standard rose tree. The exterior slope, as indicated by the shading, is long, and gradually diminishes, like a glacis, till it imperceptibly unites with the common level
5, Beds for groups of dahlias on grass, the highest plants being in the middle of the beds.
6, Dug border, in front of a plantation of evergreens and low deciduous flowering trees, for high and low perennials, and annual flowers.
7, Dug borders for perennials, annuals, &c., and plants out of the green-house.
8, Dug borders for low flowers, all upon grass. The two conical trees shown at the steps, are arbor vitæs.
9, Dug borders, on grass, for high flowers, &c. Next to the palings are various deciduous trees and evergreen shrubs; and the palings are covered with common laurels, trained like fruit trees. This paling is of common Baltic deal, Kyanised, but not painted, and it appears to stand very well.
10, Mulberry tree.
11, Yew hedge, to separate the flower-garden from the entrance front.
12, Sloping bank of turf, having a rise of 3 ft. on a base of 7 ft. This slope was formed in consequence of the house standing on an inclined plane. The house now has the effect of standing on a horizontal platform.
13, Steps leading from the lower to the upper flower-garden.
14, Wall to the offices, which, containing no windows, is covered with peach, nectarine, and apricot trees. Flowering creepers might be substituted; or it might be treated as a conservative wall, and covered with myrtles, camellias, oleanders, fuchsias, &c.

Fig. 176., p. 284., is a view of the entrance-front of this villa.

372. *Management of the grass field.*—The total quantity of land at Fortis Green is $4\frac{1}{4}$ acres, of which $1\frac{1}{4}$ acre is occupied by the house, pleasure ground, kitchen-garden, shrubberies, &c., and 3 acres are exclusively devoted to sheep.

373. *There are two modes of stocking a farm with sheep upon a small scale.* —*First method.*—Buy in September, or in the beginning of October, three ewes in lamb, per acre, at 25*s.* each, which will, on an average, produce four lambs an acre, in February (though there are frequently five or six). These lambs will be fat in May, or early in June, and will sell for 27*s.* each. The fleece of each ewe will weigh about 4lbs., and will sell for 1*s.* per lb.; and, nine or ten weeks after the lambs are gone, the ewes themselves will sell for 30*s.* each. This is a fair average, if the season is mild; but, as that cannot always be reckoned upon, it is prudent to grow mangold wurzel or Swedish turnips in some corner of the garden, which, with a truss of hay (rowens) to each sheep, will provide for the winter, when the ground is covered with snow; and thus the ewes will be kept in good condition, and be better prepared to afford milk for the lambing season. Spare Brussels sprouts and Scotch kale are very useful to give to the ewes after lambing, as they are extremely productive of milk, but *too much* is apt to induce rot, therefore caution is required.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The account on this first mode will, therefore, run thus :

	£	s.	d.			
Four lambs, at 27*s* each	5	8	0			
Wool of three ewes, 4*s*. each fleece	0	12	0			
Profit upon three ewes, at 5*s*. each	0	15	0			
				6	15	0
Deduct						
Clipping and washing, 6*d*. per head	0	1	6			
Hay, one truss per head, at 2*s*. 6*d*.	0	7	6			
Salesman's commission and driving, 7*d*. per head	0	1	9			
				0	10	9
Clear profit per acre				6	4	3
Acres						3
				£18	12	9

Second method.—This is rather more profitable, with less risk in lambing, and also with less consumption of winter food. It consists in buying in autumn, as above, only two ewes per acre. The fair way, however, of reckoning upon this plan will be best made upon the three acres, because six ewes will, upon the average, produce eight lambs, which are not divisible by three, without a fraction. Then, in March, buy eight tegs (that is the last year's late lambs), at 25*s*. each, the wool of which is more valuable than that of ewes by 3*s*. per fleece. The tegs will sell in autumn for 36*s*. per head.

The account upon this second method runs thus :

	£	s.	d.			
Eight lambs, at 27*s*. each	10	16	0			
Wool of six ewes, at 4*s*. each	1	4	0			
Profit upon the six ewes, at 5*s*.	1	10	0			
Wool of eight tegs, at 6*s*. per fleece	2	8	0			
Profit upon eight tegs, at 11*s*.	4	8	0			
				20	6	0
Deduct						
Hay for six ewes, at 2*s*. 6*d*.	0	15	0			
Clipping for 14 ewes and tegs, 6*d*.	0	7	0			
Salesman's commission and driving, 7*d*. per head for 14	0	8	2			
				1	10	2
Clear profit upon three acres				£18	15	10

Of course an inexperienced person should employ a respectable salesman in Smithfield, who will always be able to supply, when wanted, at about the above prices, though sometimes ewes are bought for 23*s*. each ; and, if not convenient to the owner of the land to sell to his own butcher, the same salesman will sell them at 6*d*. per head commission, which is not deducted in the above accounts, because it can seldom happen that a butcher who is dealt with the year round will refuse to buy and give credit against his account.

374. *The above modes of stocking* apply only to good land in the neighbourhood of London, particularly if it is dry and has sweet herbage. In the spring, when there is a prospect of a very abundant supply of grass, the three acres may carry nine tegs, if the ewes and lambs are in capital condition ; overstocking, however, even with one head, is hazardous. On a small

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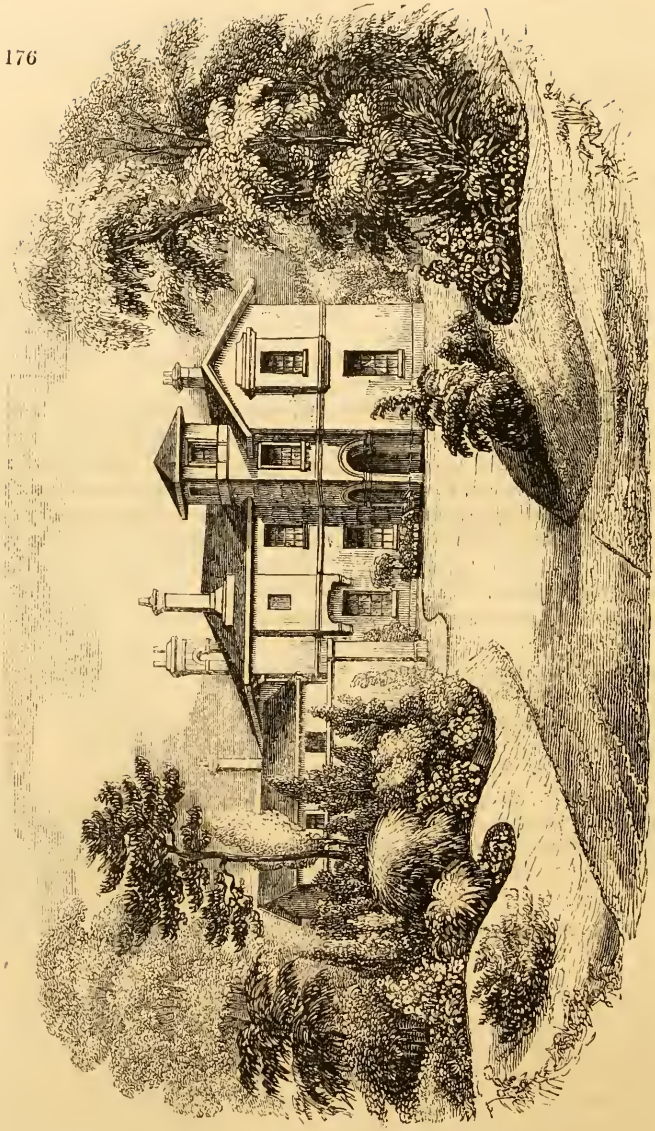

scale, like that in question, it is very desirable to divide the land by hurdles, so that the stock may be changed every ten days; since nothing advances sheep more rapidly than a "fresh bite," and the grass by this means is also less wasted. Sometimes six ewes in eight will have twins; and an instance even more prolific than this occurred in the year 1838 in a paddock on Muswell

Hill, where four Leicester ewes produced eight lambs, which sold for 27*s.* each.

	£	*s.*	*d.*			
Hence, eight lambs, at 27*s.*	10	16	0			
Wool of four ewes, at 4*s.*	0	16	0			
Profit on four ewes, at 5*s.*	1	0	0			
				12	12	0
Deduct						
Hay, 2*s.* 6*d.*	0	10	0			
Clipping, &c., 6*d.*	0	2	0			
Commission, &c., 7*d.*	0	2	4			
				0	14	4
Clear profit from 4 ewes				£11	17	8

Should there be more mangold wurzel or Swedes grown than are wanted, the overplus is always extremely saleable to cow-keepers, the former from 2*l.* to 3*l.* per ton, according to the abundance or scarcity of turnips.

375. *Remarks.*—Sheep are kept at Fortis Green, in preference to a cow, because the family is small, and, the neighbourhood abounding in farms, the supply of milk and butter is cheaper than were it the produce of the three acres, considering the constant attendance, risk, and trouble, incidental to cow-keeping; whereas sheep are very ornamental, and give no trouble worth naming.

Design XXIV.—*A villa of four acres.*

376. *General observations.*—The occupier of the villa, the plan of which is shown in *fig.* 177., took a long lease of seven or eight acres of ground in the parish of Hammersmith. He took about four acres into his own possession, and the remaining part, lying along the public road, he let off in portions of a quarter of an acre each, for the purpose of being laid out and built on. This gentleman's own portion extends along the public road, from *a* to *b* in the figure. On the left, it is bounded by a brook (*b c*), beyond which are the grounds of a handsome villa, the two grounds serving mutually to set off each other. On the east, it is bordered by the boundary belt of a gentleman's park; and it extends behind the portion of ground allotted off, in the form of a paddock of upwards of two acres. This portion of the residence, which extends behind the frontage allotments, is kept in pasture, for the purpose of grazing a horse and cow; and, as the soil is rich, and moist rather than dry below, it produces a great abundance of nutritive herbage, and is a source of much comfort and enjoyment to the occupier. The quantity of grass produced is greatly increased by dividing the field by hurdles into three equal portions, and by only grazing one portion at a time. This practice might even be improved on, by dividing it into four equal portions, keeping the cow and the horse always separate, and making one animal always follow the other. The reason why this is advantageous is, that the droppings from horses produce a rank growth, which is not objected to by cows, though it is by horses; and the same thing takes place in respect to cows.

377. *Description, &c.*—The surface of the ground of this villa is perfectly flat, but fortunately elevated 2 or 3 feet above the level of the brook (*b c*). There is a carriage entrance near *a*, and a private door for domestics near *b*. The house consists of two parlours (*d e*), a kitchen (*f*), and the usual offices,

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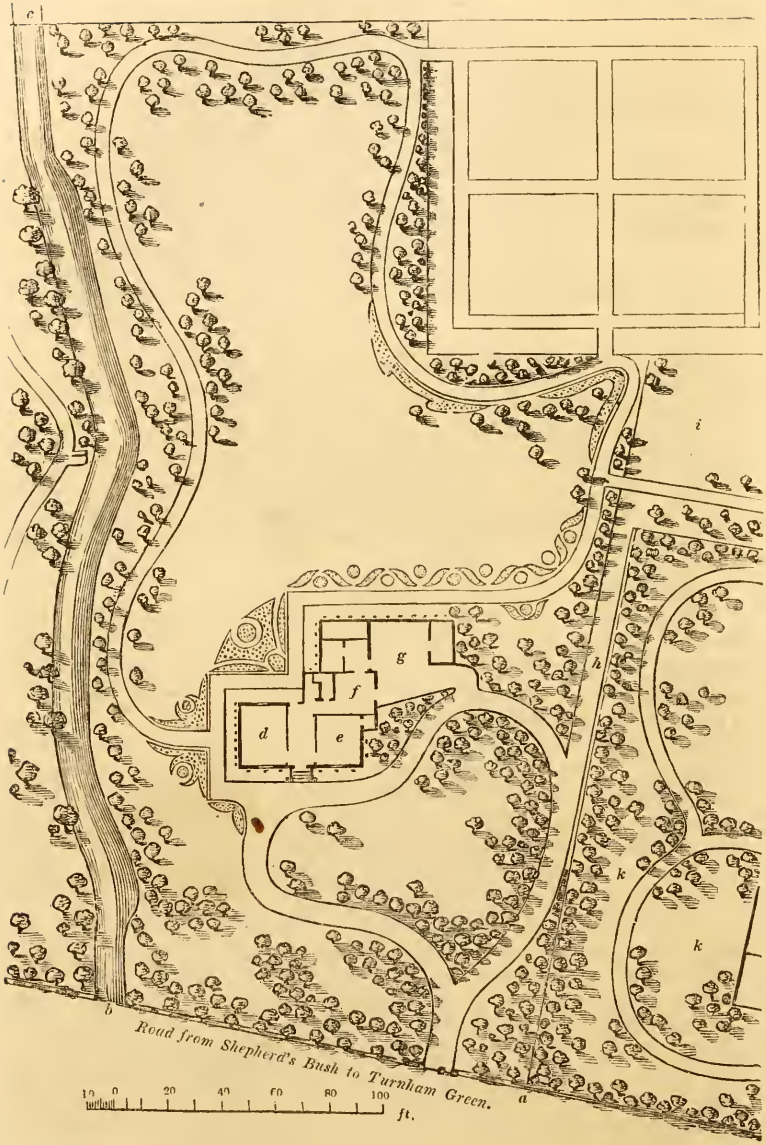

including a cow-house, stable, and gig-house. The kitchen and stable-court (*g*) are screened by plantations, as is the carriage road (*h*), which leads to the field (*i*) behind the range of front allotments, a portion of one of which is

shown at *k*. The beds of flowers along the pleasure-ground walk, in this design, require no explanation; and the kitchen-garden is evident from its rectangular form. It is surrounded by a holly hedge, and, therefore, requires very little effort on the part of the planter of the pleasure-ground to conceal it. From the turn of the pleasure-ground walk at the principal entrance to the kitchen-garden, it is obvious that this garden is not intended as a place to walk in. In short, a kitchen-garden without walls is too like an arable field anywhere, and, in London, too like a market-garden, to be much resorted to as a place of recreation. This is more particularly the case where the plan is a square of limited extent, as in the enclosure before us. The square form and limited extent give the idea of confinement; whereas a long narrow slip, even though bounded by hedges, has more in it to amuse: on entering the strip at one end, something may be hoped for before we reach the other; but, in the case of a small square, the whole is seen at once the moment of entering; and, all the walks being equally short, and all the boundary fences equally exposed to the eye, there is no desire to proceed farther. These remarks as to the kitchen-garden apply chiefly in the case of a visiter walking round the place for the first or second time: to the occupant, the crops and the cropping are sources of particular interest. The conclusion that we wish to be drawn in the way of principle is, that, for interesting the imagination, and for picturesque effect, a small spot of ground, whether a plot of two or three perches, or a residence of five or six acres, should extend in one of its directions much more than in another: it should be much longer than it is broad, and the direction of its length should be crooked rather than straight.

Design XXV.—*A villa of seven acres, contained in a space nearly square.*

378. *Ground plan, &c.*—This design, of which *fig.* 178. is a ground plan, is contributed by Mr. Glendinning, landscape-gardener, Turnham-green. The form or outline of the ground, Mr. Glendinning observes, is the most unfavourable for forming a place, of any that can be devised, for producing effect; but it is chosen as being the one which most frequently occurs in the neighbourhood of towns, and particularly in the neighbourhood of new towns, such as those of America and Australia. The plants mentioned are those which would suit a moderately warm climate. The surface is supposed to be even, but with an inclination from the house towards the pond and the paddock. This pond is supplied with water from certain fountains in the pleasure-ground, and these are supplied from a spring or brook, supposed to be exterior to the property. The level of the kitchen-garden is considered as being about 20 ft. above the level of the pond in the paddock; and the house stands on a platform, supposed to be 6 or 8 feet above the level of the kitchen-garden. The paddock is supposed to be grazed by cows and a few sheep. The edges of the pond Mr. Glendinning would plant with abundance of *Arúndo Dònax*, *Phórmium tènax*, cannas, and hedychiums. The pond should also, he says, swarm with fish; and should have some wild ducks, a couple of swans, the bernacle goose (*Anas erythropus L.*), the Egyptian goose (*Anas ægyptìaca L.*), &c. The boundary fence to this residence, whether wooden pales or a stone or brick wall, should be such as to resist every description of cattle; and within it a row of evergreen Lucombe oaks are supposed to be planted at 20 ft. distance from the boundary, and the same distance from one another. Within these, there should be a row of the ilex oak, and a third row of hollies, yews, and Portugal laurels alternately. This

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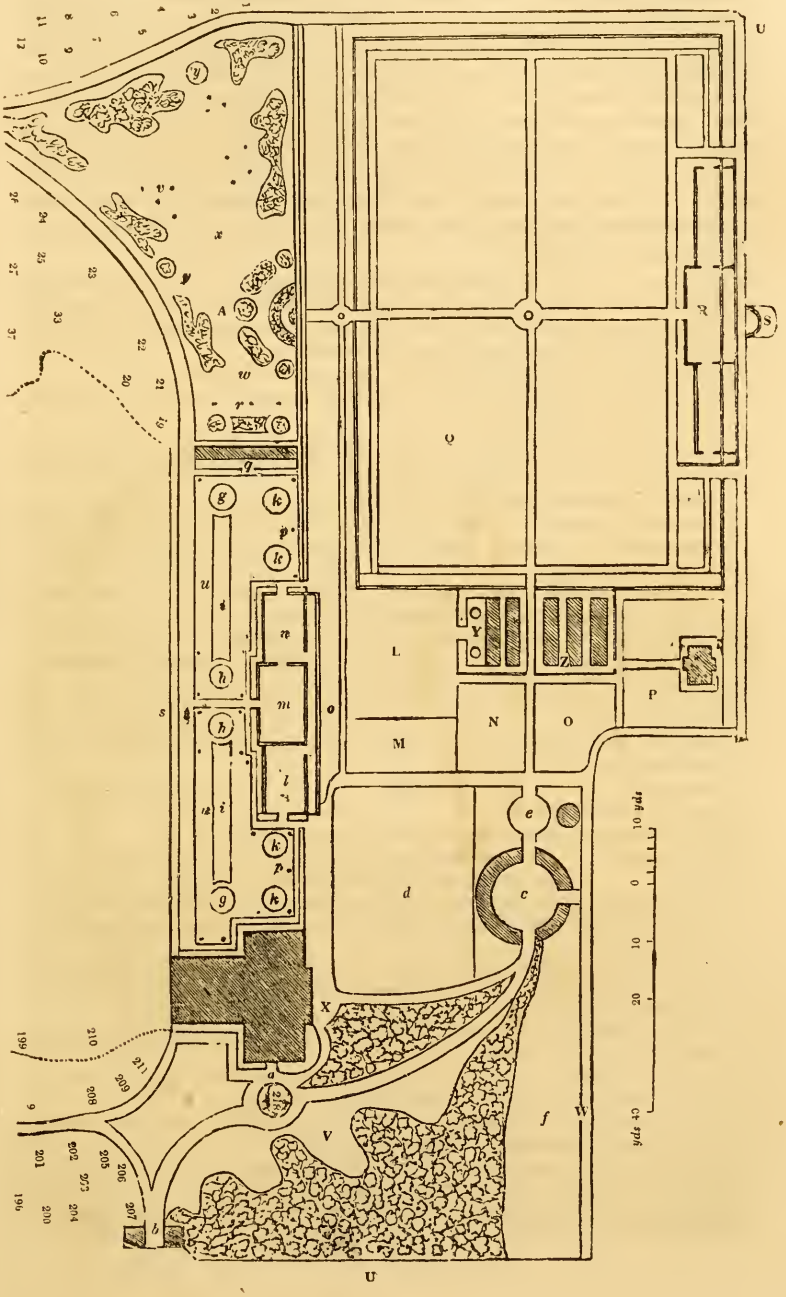

will completely shelter the grounds within, and exclude all objects in the immediate vicinity of the residence. In the pleasure-ground there is a terrace-wall (*s*), within which there is a border sufficient for 500 herbaceous plants; and the rockwork (c to F) will afford room for 500 additional species, including the cistus and helianthemum families. The narrow border in front of the botanic hot-houses (*l*, *m*, *n*) will afford ample room for a collection of ixias, watsonias, gladioluses, amaryllises, oxalises, and similar Cape bulbs and tubers; so that a very creditable collection of every kind of garden plant, whether ligneous or herbaceous, may be found in even a small place of this extent. This will be rendered more obvious after perusing the list of trees and shrubs given for planting the boundary plantation. The following explanations refer to *fig.* 178.

a, The house. *b*, Entrance from the public road. *c*, Stable-court.

d, Drying-ground; a part of the circular building enclosing the stable-court being a laundry, opening to the drying-ground; a part of it a brewhouse, opening to the west; and a part of it a poultry-house, opening to the south-east.

e, Pit for the stable dung, with a movable roof to prevent evaporation.

f, Place for hay-ricks, stacks of wood, and various other matters required for the stable-court and kitchen-garden.

g g, Two marble fountains, rising from octagonal basins.

h h, Sarcophagi, elevated on angular balls of stone, filled with pelargoniums, salvias, &c., in summer; and with rhododendrons in winter.

i i, Beds for florists' flowers, with stone kerbing 8 in. high, and with an awning to fit over them when requisite. After the florists' flowers, such as tulips, hyacinths, &c., have been removed, their place is supplied with showy annual flowers, brought forward in the reserve-ground.

k k k k, Circular beds, lined inside with brick, with stone kerbing, for bulbs in spring, and the best kinds of dahlias in summer and autumn.

l, Green-house for a miscellaneous collection. *m*, Stove.

n, House for Cape heaths. *o*, Back sheds to the range of botanical hot-houses.

p p, Conservative walls. *q*, Aviary.

r, Flower-beds, with glass frames to fit over them; being chiefly used for growing hyacinths.

s, Terrace wall, with ornamental vases, immediately within which is a border for choice herbaceous plants.

t, Terrace walk. *u u*, Lawn. *v*, Scattered shrubs.

w, Groups of variegated plants.

x, Lawn, varied by groups of shrubs, baskets of flowers, standard roses, &c.

y, Flower baskets. *z*, A sun-dial, placed against a conservative wall.

A, Rosarium. B, Covered seat, with a basket of flowers in front.

C, D, E, F, Rockwork, rustic seat, grotto, and rocky fountain; the whole varied by rock-plants and climbers; the grotto consisting of two stories, the upper one serving as a prospect tower.

G, A pond, or artificial lake, the shape being such as to be wholly seen from every point of view, and therefore not calculated for picturesque effect so much as brilliancy, and the display of aquatic plants along its margin.

H H, Wire fence, separating the paddock, which is to be pastured, from the lawn, shrubbery, and arboretum, which are to be mown.

I, A covered seat, and in front of it a basket of Californian annuals; beyond which are a pedestal and vase (K), to the memory of Douglas the botanist.

L, Reserve-ground to the kitchen-garden, and liquid manure tank, with a pump, for receiving the drainage from the stables, &c., communicating with

M, The botanic frame-ground, placed in this situation to be near *e*, for stable dung.

N, Reserve-ground, and rot heap for the botanic hot-houses.

O, Compost-ground, liquid manure tank with cover, and rot heap for the kitchen-garden.

P, Gardener's house, and private court.

Q, Kitchen-garden, of which *fig.* 179. is a working-plan.
R, Pine-stove in the centre; the one wing being a vinery, and the other a peach-house.
S, Rubbish-heap. T, Orchard.
U U U U, Situation of the four rows of trees intended to surround the whole, for the purposes of shelter and seclusion.
V, Lawn, bordered by shrubbery, chiefly evergreens, treated in the picturesque manner.
W, Back road to the stables, kitchen-garden, and house.
X, Back entrance to the house.
Y, Forcing-pits to the botanic stoves, with two small basins of water, as a place of reserve for bringing forward aquatic plants for the pond (G).
Z, Pine-pits and forcing-pits for the kitchen-garden.

References to the numbers in *fig.* 178., indicating the kinds of trees that are to be planted round the paddock. The names are Mr. Glendinning's, and all the plants may be obtained by them in the nurseries.

1, Magnòl*ia* grandiflòra.
2, fuscàta.
3, g. exoniénsis.
4, pùmila.
5, auriculàta.
6, obovàta.
7, caudàta.
8, acuminàta.
9, grácilis.
10, glaúca.
11, Thompson*iàna*.
12, Araucària excélsa (to be protected in winter).
13, brasiliàna.
14, imbricàta.
15, Cunninghàm*ia* lanceolàta.
16, *Ribes* speciòsum.
17, sanguíneum.
18, níveum.
19, Liriodéndron Tulipífera.
20, integrifòlia.
21, 22, Hybrid rhododendrons.
23, *Bérberis* aristàta.
24, dúlcis.
25, floribúnda.
26, dealbàta.
27, Mahòn*ia* fasciculàris.
28, *A*quifòlium.
29, nervòsa.
30, rèpens.
31, *Ribes* malvàceum.
32, glutinòsum.
33, Kölrentèr*ia* paniculàta.
34, *T*ília argéntea.
35, parvifòlia aúrea.
36, heterophýlla.
37, laciniàta.
38, rùbra.
39, *Aïlántus* glandulòsa.
40, Aristotèl*ia Mácqui*.
41, variegàta.
42, *P*aliùrus aculeàtus.
43, *A*'cer striàtum.
44, rùbrum.
45, *p*latanöìdes laciniàtum.
46, sacchárinum.
47, dasycárpum.
48, macrophýllum.
49, créticum.
50, O'palus.
51, japónicum péndulum.
52, *P*tèlea trifoliàta.
53, Photínia serrulàta.
54, Xanthóxylum *f*raxíneum.
55, nítidum.
56, *Z*izyphus *L*òtus.
57, *E*uónymus latifòlius.
58, americànus.
59, Pittósporum *Tobìra*.
60, *C*eanòthus americànus.
61, 62, 63, *I*lex *A*quifòlium, three varieties
64, *R*hámnus *A*latérnus.
65, *A*'rbutus procèra.
66, *U*'nedo.
67, *a*ndrachnöìdes hýbrida.
68, *a*ndrachnöìdes.
69, *A*ndráchne.
70, *B*úxus baleárica.
71, *Æ*'sculus rubicúnda.
72, Pàv*ia* americàna.
73, cárnea.
74, flàva.
75, macrostàchya.
76, Virgíl*ia* lùtea.
77, Gledítsch*ia* monospérma.
78, hórrida.
79, triacánthos.
80, brachycárpa.
81, macrántha.
82, *C*ytisus *L*abúrnum péndulum.
83, purpùreus.
84, *D*iospyros virginiàna.
85, *Negúndo f*raxinifòlium.
86, Plánera Richárd*i*.

87, *F*ráxinus parviflòra.
88, víridis.
89, argéntea.
90, Gymnócladus canadénsis.
91, Robín*ia* Pseùd-*A*càcia tomentòsa.
92, inérmis.
93, viscòsa.
94, híspida *r*òsea.
95, *Caragàna* arboréscens.
96, Halimodéndron argénteum.
97, *Thèa Bohèa.*
98, víridis.
99, Caméll*ia*, white.
100, striped.
101, Warratah.
102, *C*èdrus Libàni.
103, *P*ópulus heterophýlla.
104, *P*inus halepénsis.
105, *Cémbra.*
106, *A*càcia *Julibrissin.*
107, dealbàta.
108, *C*ércis *S*iliquástrum.
109, Cratæ'gus *Azaròlus.*
110, *C*érasus lusitánica.
111, *P*àdus.
112, *P*rùnus insititia.
113, cerasífera.
114, *S*pártium monospérmum.
115, Cratæ'gus nìgra.
116, *S*pártium *j*únceum.
117, Cratæ'gus grandiflòra.
118, *S*àlix vitellìna.
119, babylónica.
120, pentándra.
121, Cratæ'gus Douglàs*ii.*
122, *U*'lex europæ'a flòre plèno.
123, Cratæ'gus orientàlis.
124, tanacetifòlia.
125, Cratæ'gus coccínea indentàta.
126, punctàta aúrea.
127, *P*inus palústris.
128, *P*ópulus balsamífera.
129, *P*inus sylvéstris.
130, *A*'bies Clanbrasil*iàna.*
131, *P*ópulus álba.
132, Cratæ'gus *p*yrifòlia.
133, macrántha.
134, Crús-gálli *p*yracanthifòlia.
135, *Q*uércus pedunculàta.
136, *P*héllos.
137, *S*ùber.
138, vìrens.
139, *I*'lex.
140, *Ballòta.*
141, fastigiàta.
142, *R*òbur.
143, *Taúzin.*
144, *Æ*'gilops.
145, *Q*uércus *C*érris.
146, *P*látanus cuneàta.
147, orientàlis.
148, Salisbùr*ia* adiantifòlia.
149, Liquidámbar Styracíflua.
150, *C*éltis orientàlis
151, Tournefórt*ii.*
152, Escallòn*ia* rùbra.
153, bífida.
154, *F*àgus americàna purpùrea
155, ferrugínea.
156, *S*àlix babylónica.
157, *B*étula papyrífera.
158, Broussonèt*ia* papyrífera.
159, Maclùr*a* aurantìaca.
160, *H*amamèlis virgínica.
161, *P*rìnos glàbra.
162, verticillàta
163, *Amelánchier* Botryàpium.
164, sanguíneum.
165, *Catálpa syringæ*fòlia.
166, *U*'lmus crìspa.
167, rùbra péndula.
168, *C*èdrus Libàni.
169, *A*'lnus cordifòlia.
170, *J*ùglans nìgra.
171, *O*'strya virgínica.
172, *L*aúrus nóbilis.
173, Castànea vésca.
174, *P*ópulus álba.
175, *N*yssa tomentòsa.
176, *H*ippóphae Rhamnoìdes.
177, Halès*ia* tetráptera.
178, *P*hiladélphus grandiflòrus.
179, Leptospérmum emarginàtum.
180, Aràlia spinòsa.
181, *L*aúrus *Benzòin.*
182, Plánet*a* Richárd*i.*
183, Gmèlin*i.*
184, *P*istàcia *T*erebínthus.
185, *M*òrus nìgra.
186, *C*ydònia sinénsis.
187, Liriodéndron obtusíloba.
188, Edwárds*ia* microphýlla.
189, *P*inus uncinàta.
190, ponderòsa.
191, *A*'bies Douglàs*ii.*
192, *P*inus Sabin*iàna.*
193, *C*èdrus *Deodàra.*
194, *A*'bies Menziès*ii.*
195, Deútz*ia* scàbra.
196, Taxòdium dístichum.
197, Benthàm*ia* fragífera.
198, Eriobótrya japónica.
199, *L*àrix péndula.
200, *M*èlia *Azedarách.*
201, *C*upréssus sempervìrens horizontàlis.
202, *T*hùja orientàlis.

203, *Cupréssus lusitánica.*
204, *Pìnus Pinea.*
205, *Juníperus repánda.*
206, suécica
207, *Pópulus trépida.*
208, Edwárds*ia* chrysophýlla.
209, *Juníperus recúrva.*
210, *Quércus pedunculàta variegàta.*
211, Chimonánthus frà*grans.*
212, *Cupréssus sempervìrens stricta.*
213, *Fráxinus excélsior péndula.*
214, *Pópulus trémula.*
215, *Fàgus sylvática péndula.*
216, *Phillýrea péndula.*
217, *Juníperus phœnícea péndula.*
218, *Cèdrus Libàni.*

A few of the species above enumerated will not stand in the open air without protection, in the neighbourhood of London, but in the south of England, where Mr. Glendinning formerly resided, the case is different. Camellias there stand in the open air, and grow with the greatest luxuriance; and Araucària brasiliàna, Pittósporum *Tobìra*, *Thèa Bohèa* and *T. víridis*, *Acàcia Julibríssin*, and several of the Australian Acacias, the Edwardsias, Eriobótrya japónica, and *Mèlia Azedarách*, are nearly hardy, though they all require protection in the climate of London.

379. *The kitchen-garden* (*fig.* 179.).—Though the extent of this garden is but small, being only 1½ acres, Mr. Glendinning observes that the accompanying list will show its capacity for containing fruit trees. The borders are proposed to be uncropped, or, at the most, to have only a row of strawberries near the edge of the walk. For the ground lost in this way in the inside of the garden, the space contained in the slip in the outside will be an ample compensation. The apples and pears to be trained on the espalier rails should be worked on quince and paradise stocks.

The following are the references to the plan:

A, Tank of pure water.
a, Entrance from the pleasure-ground.
b, Back sheds, fireplaces, coal-bins, working-shed (including a place for making baskets, preparing and painting labels, &c.), potting-shed, mushroom house, and fruit-room.
c, Pine-stove. *d*, Vinery. *e*, Peach-house.
f, Entrance from the frame ground.
g g, Departments for early vegetables.

1, Apple, Borovitsky.
2, Dutch mignonne.
3, Ribston pippin.
4, Golden pippin.
5, Summer golden pippin.
6, Pear, Bellissime d'hiver.
7, Beurré d'Aremberg.
8, Beurré d'automne.
9, Beurré de Capiaumont.
10, Beurré Diel.
11, Bon Chrétien fondant.
12, Beurré, Easter.
13, Beurré de Ranz.
14, Beurré Spence.
15, Catillac.
16, Chaptal.
17, Chaumontel.
18, Citron des Carmes.
19, Colmar, automne.
20, Comte de Lamy.
21, Crassane, Althorp.
22, Crassane, winter.
23, Pear, Délices d'Hardenpont.
24, Doyenne, white.
25, Duchesse d'Angoulême.
26, Famenga.
27, Figue de Naples.
28, Apple, Gloria mundi.
29, Coe's golden drop.
30, Golden Harvey.
31, Hawthornden.
32, Hicks's fancy.
33, Juneating, white.
34, Pear, Flemish beauty.
35, Fondante d'automne.
36, Fondante du bois.
37, Franc réal, summer.
38, Gendeseim.
39, Glout morceau.
40, Henri Quatre.
41, Hessel.
42, Incomparable, Hacon's.
43, Sucre vert.
44, Marie-Louise.

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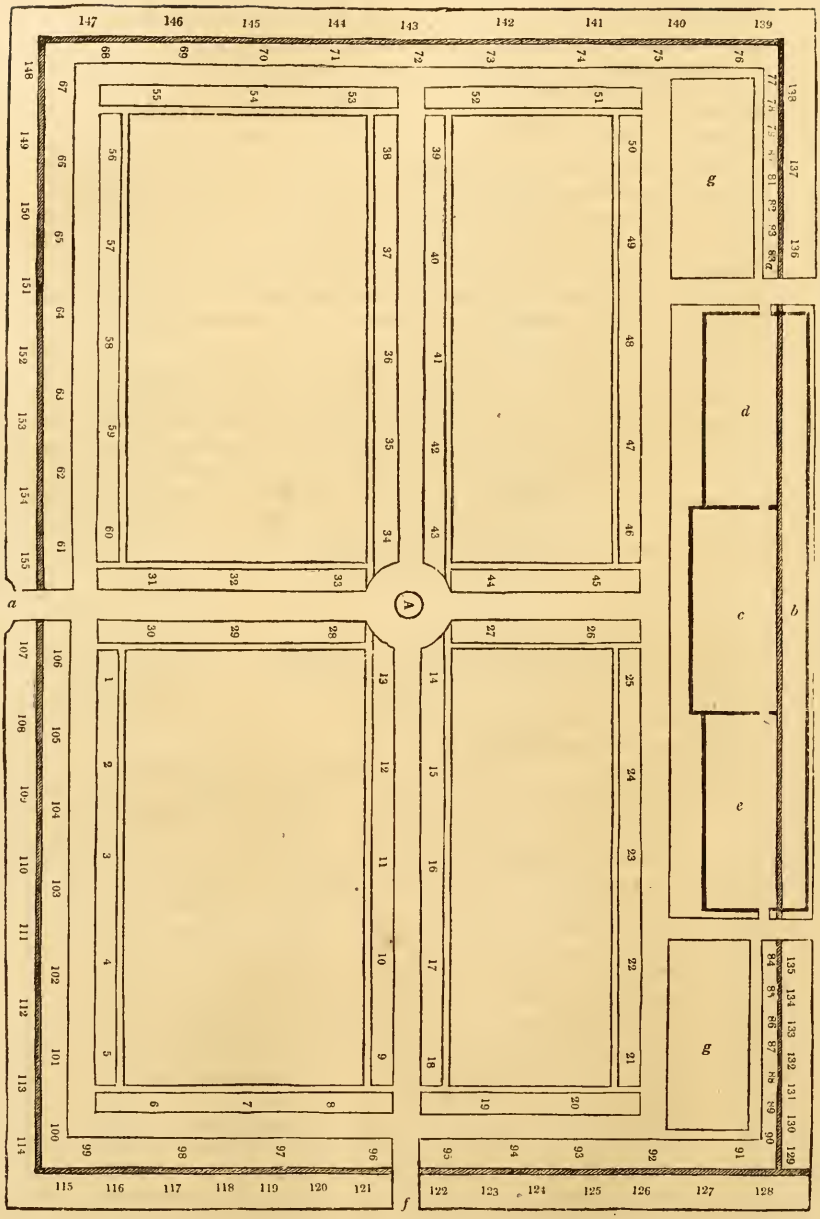

45, Pear, Monarch, Knight's.
46, Napoleon.
47, Nelis, winter.
48, Ne plus meuris.
49, Passe-Colmar.
50, Rouse Lench.
51, Seckle.
52, St. Germain, Uvedale's.
53, Louise bonne (Jersey).
54, Beurré, Easter.
55, Beurré de Ranz.
56, Apple, Margaret, early red.
57, Nonpareil, Braddick's
58, Syke House russet.
59, Reinette du Canada.
60, Russet, Boston.
61, 62, 63, Cherry, Morello.
64, Pear, Marie-Louise.
65, Beurré, brown.
66, Glout morceau.
67, Incomparable, Hacon's.
68, Plum, Morocco.
69, Coe's golden drop.
70, Drap d'or.
71, Cherry, Elton.
72, Downton.
73, May duke.
74, Peach, Late admirable.
75, Colonel Ansley's.
76, Nectarine, Murrey.
77, Cherry, May duke.
78, Grape-vine, Willmot's muscat.
79, Espérione.
80, Royal muscadine.
81, Paramata cluster.
82, Grove End sweetwater.
83, White cluster.
83 *a*, Pitmaston white cluster.
84, Fig, Figue blanche.
85, Genoa, large white.
86, Ischia, yellow.
87, Marseilles.
88, Pregussata.
89, Brown Turkey.
90, Apricot, Moor Park.
91, Nectarine, Elruge.
92, Violette hâtive.
93, Peach, Barrington.
94, Plum, Green gage.
95, Reine Claude violette.
96, Pear, Beurré, Easter.
97, Beurré de Ranz.
98, Gansel's bergamot.
99, Colmar.
100, Plum, Magnum bonum, white.
101, Magnum bonum, red.
102, Apricot, Turkey.
103, Cherry, Griotte de ratafia.
104, 105, 106, Morello.
107, Peach, Bellegarde.
108, Royal George.
109, Nectarine, Violette hâtive.
110, Apricot, Royal.
111, Hemskirke.
112, Cherry, May duke
113, Elton.
114, Bigarreau Napoléon.
115, Pear, Easter beurré.
116, Beurré de Ranz.
117 to 126, Currants, white and red.
127, Pear, Chaumontel.
128, Passe-Colmar.
129 to 135, Currants, red and white.
136, Plum, Orleans.
137, Washington.
138, Mirabelle.
139, 140, 141, Green gage.
142, 143, 144, Apricot, Moor Park.
145, 146, 147, Cherry, Morello.
148, Plum, Drap d'or.
149, Green gage.
150, Apricot, Red masculine.
151, Royal.
152, Nectarine, Hunt's Fanny.
153, Elruge.
154, Peach, Noblesse.
155, Grosse mignonne.

380. *Remarks.*—This design is very valuable on account of the list of trees with which it is accompanied, and the indications by figures in the plan of the kitchen-garden (*fig.* 179.), and in that of the shrubbery (*fig.* 178.), of the situations in which they are to be planted. All the fruit trees enumerated in the former list have been fruited by Mr. Glendinning, and he can therefore speak confidently of their merits. The arrangements immediately connected with the kitchen-garden, such as the melon-ground, &c., seem also very good; and those for saving all the liquid manure, excellent. Considering that the surface of the ground is nearly flat, or, at all events, that the difference of level between the highest and the lowest points is not more than 30 or 40 feet, and that the whole is surrounded by a belt of Lucombe oaks, which will

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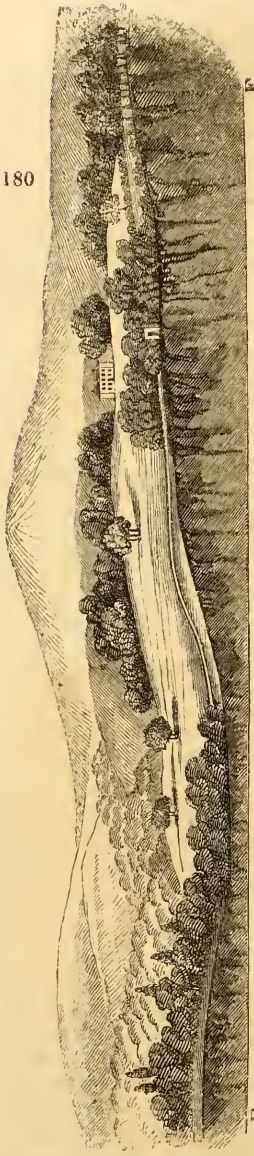

completely exclude all exterior view, this residence will depend for its interest entirely on its interior beauties; and hence the propriety of introducing as great a variety of trees and shrubs as can be grown in the gardenesque manner in so limited a spot. The close plantations near the house, it will be observed, are planted thick in the picturesque style, which will serve by contrast to set off the gardenesque plantations to advantage.

DESIGN XXVI. — *Plan and Description of the Grounds at Fairfield Cot, by Mr. Parkins.*

381. *General observations.*—This design is taken from a work entitled *Six Designs for Laying out Grounds*, published by Mr. Parkins in 1793. The situation is secluded, and there are only five acres of pasture land. The house is erected on the upper part of a gently rising ascent, commanding the "most luxuriant views of hill, dale, wood, and water." The offices and the kitchen garden are concealed by a shrubbery.

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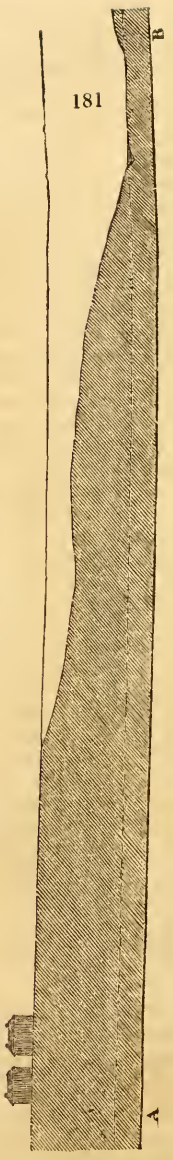

382. *Description, &c.* — The following description is given in Mr. Parkins's own words: "The orchard, placed at an extremity, gives variety, and hides the bounds, where otherwise they would, by being seen, defeat the deception of extent; and likewise confines the view, which, but for such management, would be considerably too extensive. The remainder of the ground is again subdivided by a hedge, decked with roses, honeysuckles, and other wild shrubs, and irregularly planted, partly

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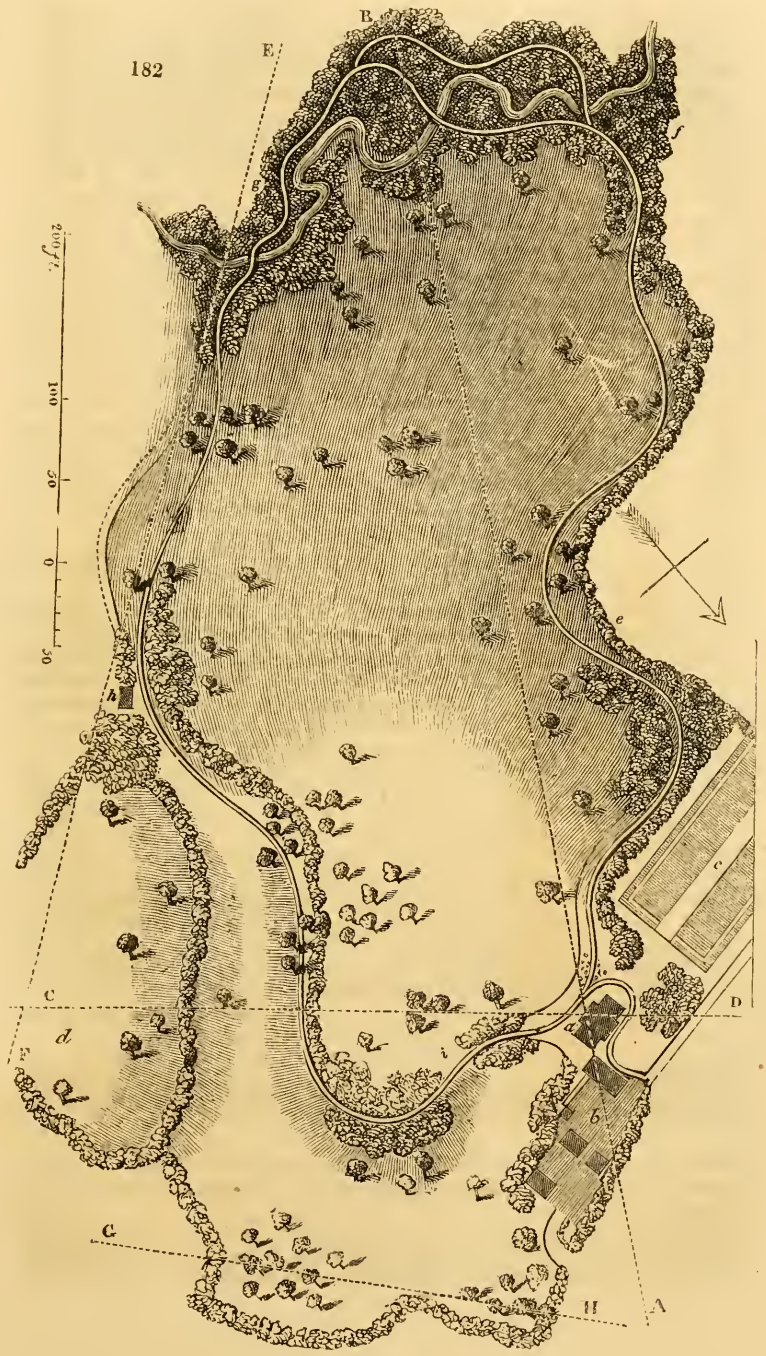

to allow the walk to take an easy bend betwixt the two inclosures, and partly to give internal variety; a circumstance which never fails to cheer the imagination, and relieve the eye. Having thus noticed the general disposition, it will be necessary to observe, that the walk, in no instance, has been suffered to approach too near the bounds. From the shrubbery, after passing a seat under a few trees (*e*, *fig.* 182.), it leads down the side of the hill to a copse overhanging a purling stream. A bridge, adjoining to a root-house (*f*), crosses the rill, the path accompanying its meandering course, till a rustic plank (*g*), thrown over the same, again unites it with the lawn. Everything here is simple and unadorned: to load with ornament a scene dedicated to contemplation and repose, would destroy the effect which a sequestered situation ever has upon a congenial mind. Pursuing the walk, a sunk fence on the right admits the country. Clumps of trees in the adjacent pastures unite it with the distance. A little gate, on gaining the summit, leads to the temple of Concord (*h*). From the window is seen to peculiar advantage the view, purposely hid by the orchard from the house. This circumstance renders the temple much more interesting than it otherwise would be, and increases the variety of the whole. From this place the walk waves to the left. Entering a small shrubbery, with a seat in a sequestered situation (*i*), it soon opens on the green, and terminates at the cottage."

a, House.

b, Stable, cow-house, piggeries, &c., hidden from the grounds by a plantation, and approached by a road overshadowed with tall trees.

c, Kitchen-garden, screened in the same manner. An opening in the shrubbery, however, admits a view down the principal walk, on each side of which the beds are arranged.

d, Orchard. This, from the cottage, has an interesting appearance; it was placed there to hide the extremity, and to confine the eye to a ruined tower, to a river meandering through the vale below, and to distant mountains, seen from the house across the lawn.

e, A seat, composed of rude materials, situated under trees. From this spot is seen an extensive distant country, adorned with water, hanging woods, &c.

f, Root-house, built of roots of trees, and thatched; the inside lined with moss. Ivy creeps over the door, along with the honeysuckle and jasmine. A table and two rustic benches constitute its furniture; on the former there is an appropriate inscription.

g, A bridge. A few large stones, supporting a plank or two, with a rail on one side, will generally be found sufficient for such a situation. It accords with simplicity, and is therefore infinitely more attractive than a formal structure.

h, Temple of Concord. A small square building, the walls emblematically painted in fresco. From the windows, a most extensive view, particularly of objects in the distance, screened from the house by the orchard.

i, A seat in a sequestered situation. On the opposite side of the walk, under cypress and flowering shrubs, an urn, dedicated to Friendship.

A B, First sectional line. See *fig.* 181. C D, Second line. See *fig.* 183.

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E F, Line for first sectional geometrical view, giving the general appearance of the lawn rising to its summit; the woods, the house, Temple of Concord, and distant country. See *fig.* 180.

G H, Line for second sectional geometrical view. In this are shown the cottage surrounded with trees; the lawn; the fence bounding the same; a bend of the serpentine walk, with part of the orchard, and the distant country. See *fig.* 184.

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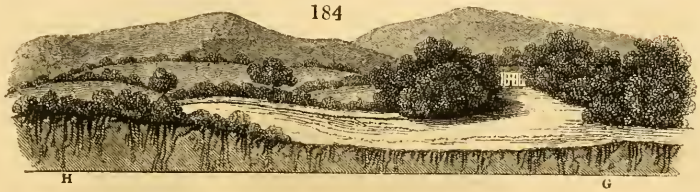

383. *Remarks.*—The sections and sectional geometrical views in this design would answer exceedingly well for giving a general idea of the effect of improvements; but they would not serve instead of a working plan. Such designs were commonly given, when modern landscape-gardening was in its infancy, by Kent, Brown, Wright, and others, and executed by contract with alterations almost at pleasure, by a contractor under the name of a new ground workman; or sometimes in the ordinary routine, under the direction of the gardener. All the details of execution, and the choice of the trees and shrubs planted, were passed over in the general design of the artist, and left to be supplied according to the taste, knowledge, or means, of the contractor or the gardener. It does not appear that, in the infancy of landscape-gardening, any great value was set upon having a variety of trees and shrubs in plantations; and, accordingly, in the first laid out places in the modern style, with the exception of Pain's Hill, and one or two others, the trees and shrubs are all of the common kind. At present, however, the taste is decidedly different, and there is a laudable desire on the part of proprietors, and especially on that of the females of their families, to render garden scenery botanically as well as pictorially interesting. The subject of the kinds of trees is scarcely at all mentioned by Mr. Parkins in the description of any one of his designs: he looks on garden scenery entirely with the eye of a painter and a poet, while the modern artist adds to these the eye of the botanist and the cultivator.

Design XXVII. *Plan and Description of Redleaf, at Penshurst, near Tonbridge, the seat of the late William Wells, Esq.*

384. *General observations.*—The estate of Redleaf, near Penshurst, lies along the north side and in the bottom of a valley distinguished by the boldness of its undulations, the large proportion of the surface which is under wood and in pasture, the fortunate existence of a fine river, and the cropping out of some rocky strata. The whole surface of this part of the country appears, at no distant period, to have been native forest, or, at all events, under coppice-wood; and hence, in many of the fields, and in all the hedgerows, there are groups of oak trees, aged thorns, maples, and hollies, which give the face of the country the woody appearance of a park. That portion of the estate which Mr. Wells laid out as a residence, occupies a steep undulating bank, facing the south-east, with a deep broad valley at one end, lying in the direction of north and south, and joining the valley of the Eden, a river which afterwards takes the name of the Medway, and joins the Thames at Sheerness.

385. *The bold and varied undulations of the grounds at Redleaf*, the fortunate disposition of the wood, and especially of the single trees and small groups, left very little for art to do upon a large scale. In some places, a field, or a part of a field, might require to be planted, in order to form, add to, or connect, masses of wood: and, in others, a coppice might require to be

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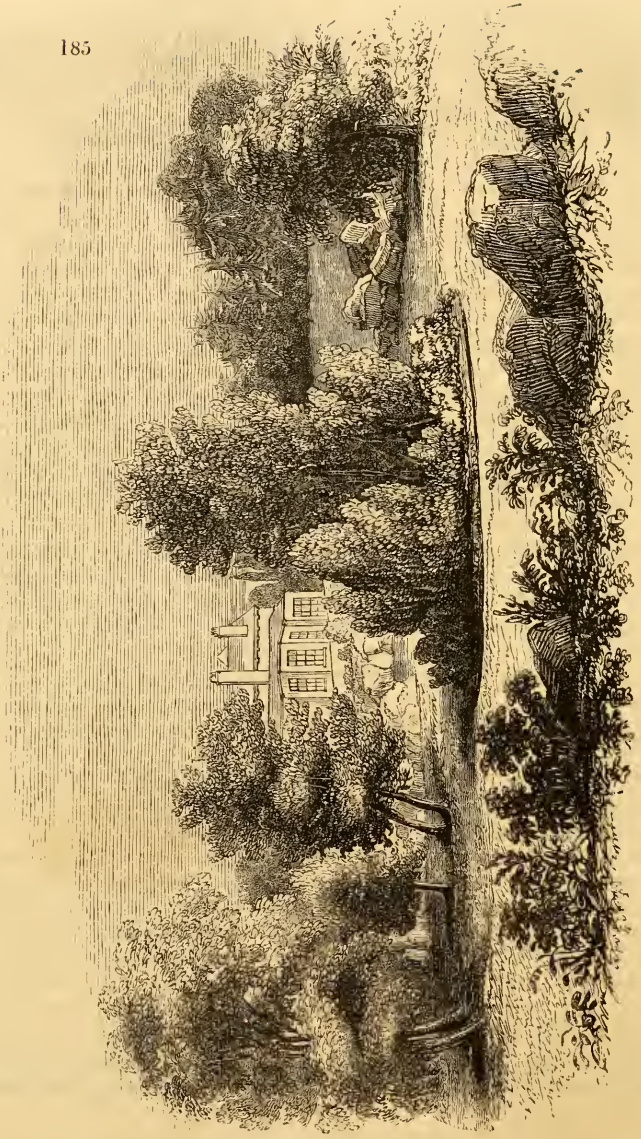


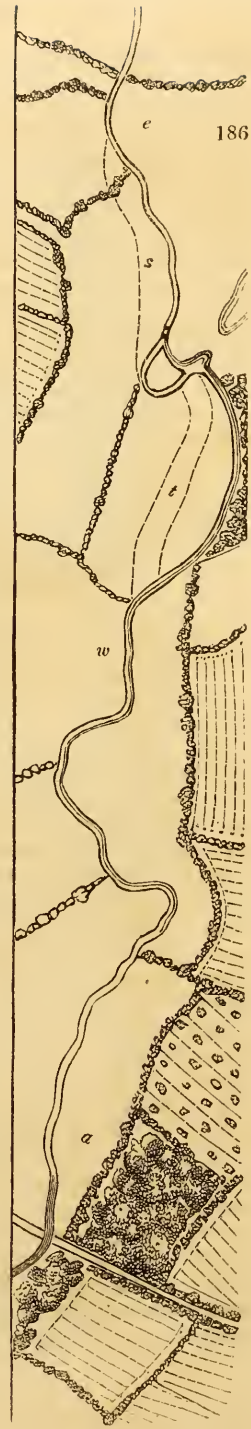
View of the House from a distant part of the Rocky Lawn.

thrown into pasture, and added to the park. But nature or accident had everywhere furnished so many trees in groups, that it became altogether unnecessary to plant; and hence there was no necessity for forming those heavy clumps by which so many places in every part of the country are dis-

figured. Another advantage of Redleaf is, that there is no marked boundary to the property; the mixture of wood, pasture, corn-field, hill, and dale, being so much alike in general feature, in every part of the country, that it is utterly impossible for a stranger to tell where any man's estate begins or ends. Hence, there was no temptation to perpetrate that deformity which so often accompanies the clump, viz. the belt; a most unsocial plantation in a moral point of view, as shutting out all one's neighbours, whether poor or rich, and one which, as it regards pictorial beauty, generally destroys all harmonious connexion of the residence with the surrounding country. Mr. Wells's operations on the park scenery of Redleaf were therefore comparatively few, and not such as in any degree tended to alter the character of the place. He widened the river in one situation, and altered its direction in another, in order that it might be better seen from the windows of the house (see *fig.* 185.); he removed hedgerows, and laid down arable lands in pasture, so as to give extent and unity to the park or lawn; he added to or diminished the masses of wood, for the same purpose; and he formed a walk, so as to enable a stranger to make a general circuit of the place. These were the great features of improvement; and they have been executed with so much success, that a stranger, when he arrives at the house, and looks at the views from its windows, is so struck with the beauty and natural appearance of the scenery, that he cannot conceive that anything more is wanting to render the place perfect of its kind. But the most beautiful scenery in the world, whether the work of nature alone, or the result of nature aided by art, will soon cease to please, unless it bears marks of its appropriation to man, or can raise up associations of that kind. Hence, the tourist, who admires natural scenery in travelling through a beautiful country, endeavours to make it his own, and to let others know that he has done so, either by describing it in words which he can read to his friends, or which he can print, and thus publish to the world (thereby showing that he has as fully enjoyed the beauties of the scenery as if it were his own); or he commits the scenery to paper by a sketch, by which he seems also to appropriate it to himself. The purchaser of a portion of the finest scenery in the world never rests satisfied until he has done something to it; and it is not enough to do something, however great a change that something may have produced, unless it be such as to be recognised by the rest of mankind. It is absolutely necessary that what is done should be discoverable as a work of art and taste. Hence, among purely natural scenery, some work of art must be introduced. Building is the common resource: but even a gravel walk, to show off the natural beauties of the scene, with seats or resting-places formed along it at proper points of view, will suffice. Admitting this principle to be founded in nature, it was not to be supposed that Mr. Wells, after having improved the general scenery of Redleaf, would rest satisfied with admiring what he had done: on the contrary, having improved the natural beauties of the place, he immediately set about adding to them the beauties of art, by the formation of what may be strictly called garden scenery. Now, the great merit of Mr. Wells as an amateur artist was, that, while he heightened and improved the natural beauties of Redleaf, he had been constantly employed, for nearly thirty years, in creating artificial beauties there, which do not, in the slightest degree, interfere with the great leading natural features of the place. There are very few other proprietors who would not, while improving such a place as Redleaf, have done violence to the natural character of the place, by the evident intrusion of art.

386. *Object in view.*—Mr. Wells had obviously been guided by two principles; viz. first, that, in the views from the house, the natural character and expression of the surrounding country should be preserved; and, secondly, that all the garden scenes should be kept subordinate, or as episodes to the main features of the place. In order to preserve the general character of the country in the views from the house, it was necessary that the same character should prevail in the foreground which existed in the different distant parts of the scene; and, hence, no flower-beds were introduced immediately before the windows of the living-rooms. Something of this kind might, no doubt, have been done, though in a sparing manner, had Mr. Wells rebuilt the house, and surrounded it by an architectural terrace or basement; but, without such a medium for uniting the house with the grounds, flowers in the foreground, Mr. Wells judged, and in our opinion most justly, would have too powerfully attracted the eye.

387. *Flower-garden.*—We must confess that it is sometimes a matter of difficulty to determine when a flower-garden should be laid out immediately in front of a house, so as to form a foreground to the distant scenery, and when it ought to be concealed or disguised. In general, this must be determined from the natural expression of the situation, and the views. When these are of a decidedly marked character, and make a strong and elevating impression on the mind, the introduction of a flower-garden in the foreground will interfere with this impression, and ought therefore to be avoided, or introduced in such a manner as to be altogether subordinate to the natural features; but, on the other hand, when these features are bad or tame, and comparatively uninteresting, a flower-garden judiciously introduced will create an interest which was naturally wanting. For example, when the foreground is a flat or even surface, with little to vary it except trees and shrubs, and when there is no strongly marked feature in the middle distance, then beds of flowers, and flowering shrubs, form a valuable resource, and may render a naturally dull place gay and interesting. This is very well exemplified at Chevening near Sevenoaks, the seat of Earl Stanhope, where the foreground on the



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lawn front is an extensive flower-garden on an even surface, with a considerable piece of water bordered by lawn and trees in the middle distance; and where the background is scenery of the same description, without the appearance of hills, or any marked feature, natural or artificial. At Eastwell Park in Kent, the seat of the Earl of Winchelsea, where the whole of the surface seen from the lawn front is flat and uninteresting, an extensive flower-garden is very properly introduced; without which the views from the windows of that side of the house would have very little beauty. On the other hand, the lawn front at Linton Place in Kent, the seat of Earl Cornwallis, looking down on a steep descent, at the foot of which is a stream winding through a fertile valley, beyond which is an extensive and somewhat varied distance, flowers in the foreground would here escape notice; or, if extensively displayed, would interfere with the strongly marked natural character of the scene. These may be consi-

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dered as rules generally applicable, because they are founded on the fundamental law of the necessity of unity of expression to complete enjoyment; and this fundamental principle evidently influenced the decision of Mr. Wells at Redleaf; but, as taste should be free, allowance must be made for that of individuals who may prefer having a peculiar and conspicuous feature in a scene, to its picturesque beauty and unity of expression as a whole. In analysing the beauties or defects of every place, it is always instructive to be able to separate what is peculiar to the situation, or the taste of the individual, from what is general, or founded on universal principles.

388. *The garden scenery at Redleaf* consists of a kitchen-garden, an orchard, an English flower-garden, a Dutch flower-garden, and an anomalous description of flower-garden, which may be called the rock-garden. This last garden constitutes by far the most singular feature of the artificial scenery of the place, and is totally different from anything else of the kind in England. The idea of forming it seems to have arisen from the existence of a ledge of rocks in another part of the grounds, and from the abundance of rock, of a kind easily quarried (red sandstone), under most parts of the surface. This part of the grounds at Redleaf is so original in character, that it is difficult to convey a correct idea of it without larger engravings than this work admits of; but we shall nevertheless make the attempt.

389. *General description, &c.*—On comparing the plan shown in *figs.* 186. and 187., with that shown in *figs.* 188. and 189., the principal alterations made by Mr. Wells appear obvious at first sight. One of these, essential to the beauty of the place, is the plantation made in the direction of *a b c*, in *fig.* 189., parallel to the approach from Penshurst. Without this plantation, which is chiefly of evergreens, the eye of the stranger arriving from Penshurst would have seen all the natural beauties of the ground before entering the house; because the ground slopes from that line of approach on the left towards the valley, and rises on the right towards the public road. The same thing would happen to a stranger arriving by the London approach, were not the trees disposed along it in the direction *d, e, f*, which shuts out the great north-western valley, except near the entrance approach; where the eye may detect between the trunks of some large trees just as much of the commencement of the valley as to set the imagination at work to guess its extent. As the wood is now disposed, the stranger, whether he arrives from London by Seven Oaks, or from Tonbridge Wells by Penshurst, drives up to the house, admiring the finely scattered groups of oaks, thorns, and hollies, on the rising grounds on one side of the approach, without being aware of what is concealed by the plantation on the other side. Entering the house, from the bay of the drawing-room at *g*, he is struck with astonishment at the extent of the prospect, and at the fine reach of the river at *h*; beyond which, up the valley, he can see nearly as far as Godstone, where some trees on the summit of a hill above that town mark its situation. If, from the centre window, he turns his head to look through the window on his right hand, he sees the whole range of the Redleaf rocks; and if he turns to the left-hand window, he sees another reach of the river appearing beyond a wood. The surface of the water of the river is probably 200 ft. below the level of the drawing-room floor from which it is seen; the chain or causeway of rocks, *i i*, 100 ft. below it, and the cottage *l*, and wood *m*, rather lower. The effect of the woodman's cottage at *l*, which may be described as one of the aboriginal

cottages of the country, is exceedingly good, as seen from the drawing-room, by the strong contrast which its humble appearance and the associations connected with it, afford to the richness and high art displayed in the house. In this extensive view, no gentleman's house is to be seen, no church, and scarcely a farm-house or cottage, so completely are almost all the objects of art concealed by the hedge-row trees. In winter, after the leaves drop, are to be seen some human dwellings, and two or three churches. From the plan *figs.* 188., 189., as compared with that shown in *figs.* 186., 187., it will be seen that the corn field *q*, in the latter figure, is planted, and the coppice-wood at *r* removed; but the most important features of improvement are, the widening of the river at *s*, and the altering of its bed at *t*, as indicated by the dotted lines in *fig.* 186. *Fig.* 191. shows a plan of the lawn and flower-gardens at Redleaf, on a larger scale.

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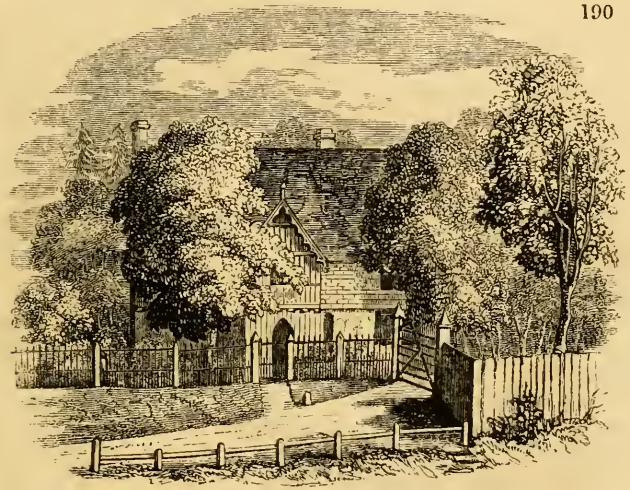

Penshurst Entrance Lodge and Gate.

a, A portion of the house.

b, Walk from the house to the garden scenery.

c, Summer-house in the English garden. This structure, of which a view is shown in *fig.* 193., is placed on a ledge of rock, which, before the garden was made, formed one side of a stone quarry; hence, immediately beneath this summer-house there is a very considerable hollow. The rest of the flower-garden has an undulating surface, and the beds are chiefly oval or circular. Among the single low trees are two specimens of the common berberry, which, trained to single stems, form very handsome objects. They are profusely covered with bloom in spring, and, in autumn, so completely clothed with their long red fruit, as to resemble, at a short distance, gigantic specimens of scarlet fuchsia. The rustic structure is curiously and exquisitely executed of different kinds of wood, but chiefly of oak with the bark removed, and of hazel. The floor is paved with oak chumps; and there is a table inlaid with different kinds of native woods; and chairs, as well as a bench, chiefly formed of hazel rods.

d, Continuation of the walk *b*, on the top of a ledge of rock still higher than the walk which passes through the summer house (*c*). The walk *d* conducts us to the Dutch garden, the buildings in which are an orangery and a rustic billiard-room.

e, An orangery constructed of oak, placed on a basement of rustic masonry, and thatched

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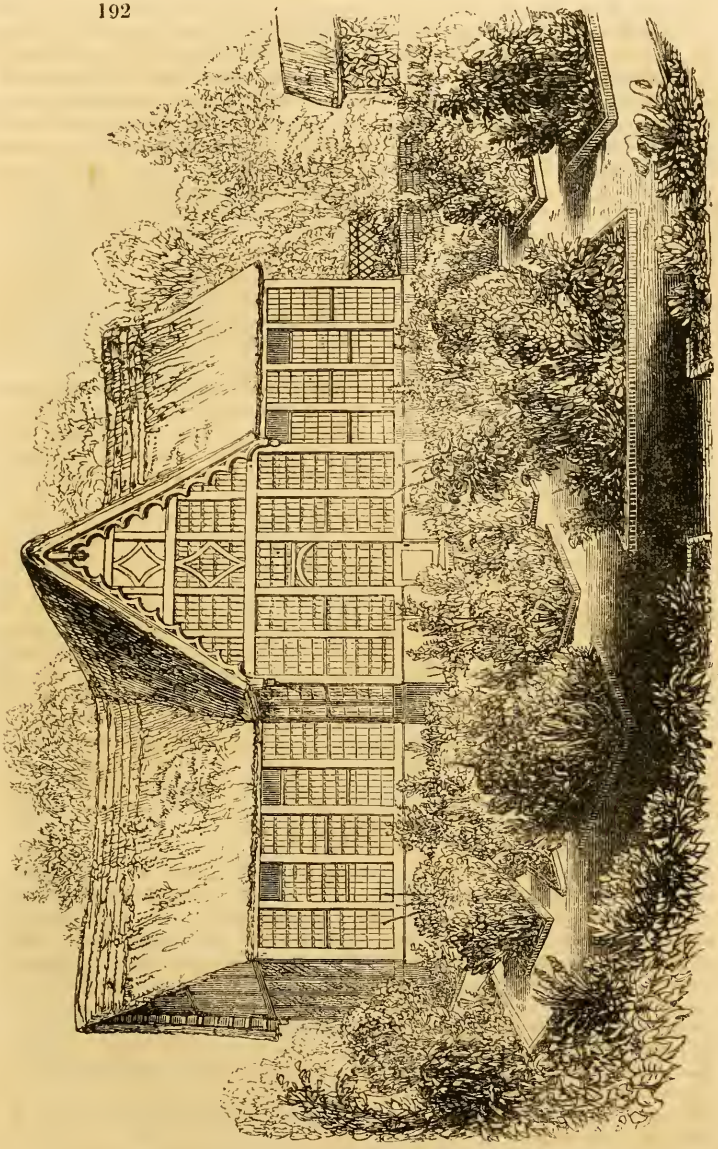

Rustic Orangery in the Dutch Garden.

with reeds, of which *fig.* 192. is a view. It is placed in the north side of the Dutch garden, some of the rhomboidal beds of which may be seen in the engraving. In this orangery there is a space in the centre, which is occupied as a sitting-room, and is furnished with chairs, tables, &c., for eating fruit or taking tea. From this scene there is a door to a Chinese dairy, richly fitted up with Chinese porcelain, many of the specimens of great size, and exquisitely painted. Amongst the flowers, we observed the blue tree

pœony, which was long supposed to be an imaginary variety of the Chinese, but which is now said really to exist; like the yellow Camellia, which has lately been seen by Mr. Fortune. Corresponding with the dairy is a small room over the stoke-hole, with a fire-place. The dairy is not used as such, but is merely to be considered as a collection of Chinese dairy porcelain. This conservatory, having a thatched roof, and being in a situation sheltered from high winds, requires very little artificial heat, even in the most severe winters. It is used to protect orange-trees, large myrtles, and such green-house plants as are in a comparatively dormant state during our winters. In summer, most of the plants are turned out, and others brought from the green-houses and forcing-houses, as they come into flower; it being found that in this comparatively cool and shaded house the bloom is retained much longer in perfection than it otherwise would be. We remarked here some orange-trees, lemon-leaved myrtles, and camellias, which had not been turned out into the open air for several years; and, though the young shoots were etiolated to a considerable extent, yet the intensely dark green of their leaves appeared to show that shade was more favourable to them than sunshine. The thatch, being of reeds, has a handsome appearance. An old cottage or barn might easily be turned into an orangery of this description.

f, A billiard-room, with a rustic veranda, also placed in the Dutch garden. It is raised on a rustic stone basement; and the veranda, which is returned at the angles, is paved with oak chumps, and forms a most convenient place for taking exercise in during rainy weather; an use which harmonises well with that of the billiard-table, which, to an amateur gardener, is chiefly valuable as affording him salutary exercise when he cannot be at work out of doors.

All the walks in the Dutch garden are paved with white brick, and edged with stone; and, as they have all a gentle inclination so as to throw off the rain rapidly, they are better adapted than any other description of path for walking on after rain; thus permitting a lover of plants to examine them in one of the most interesting states in which they can be seen in spring and summer, that is, when just revived by a shower, and while yet covered with drops of rain. The beds are planted with a very choice selection of herbaceous plants, perhaps unequalled in the country for combining compactness and neatness of growth with beauty and rarity. The walks are 2½ ft. wide, and the beds 6 ft. wide; so that any person can reach from the margin of the bed to the middle without putting a foot on it. The space beyond the circumferential walk is planted with a collection of all the best azaleas; not crowded together in one mass, as collections of this shrub and rhododendrons commonly are, but in distinct bushes, so that each is covered with flowers from the ground to the summit on every side. To insure this gardenesque appearance, the plants are taken up, reduced, and replanted in fresh peat soil, as soon as ever they begin to grow out of bounds.

g, An aquarium, on the margin of a bank of rockwork, of which *fig.* 97. in p. 187. is a view, which extends from the English garden nearly to the Dutch garden. The walk connecting these two gardens, and also a branch from it to the conservatory and kitchen-garden, are covered with an arcade of creeping shrubs, sufficiently open on the sides to admit a view of the bordering plants, which are all of the more rare and beautiful kinds. There are here, also, various *sanctums*, and minor compartments for small plants, not shown in the plan; and also a large space for setting out the green-house plants during summer.

h, Experimental garden. Here seedlings of various ornamental plants, such as dahlias, heartseases, herbaceous calceolarias, picotees, polyanthuses, &c., are reared till they come into flower; when the more beautiful sorts are selected, and the rest thrown away. It was in this garden that the first dwarf dahlias were raised by Mr. Joseph Wells, the late Mr. Wells's gardener, in the year 1825.

i, Gardener's house, which serves, also, as a lodge to the Penshurst entrance, of which *fig.* 190, p. 307., is a view.

k k, Borders of azaleas, rhododendrons, and other American flowering shrubs.

l, Kitchen-garden.

m n, Conservatories and green-houses. In one of the conservatories, there are some remarkably large and luxuriant specimens, particularly of Wistària sinénsis, the Madras citron, Cliánthus puníceus, and Enkiánthus quinqueflórus. In an adjoining conservatory, the back wall is covered with camellias, which are not trained in close to the wall, like fruit-

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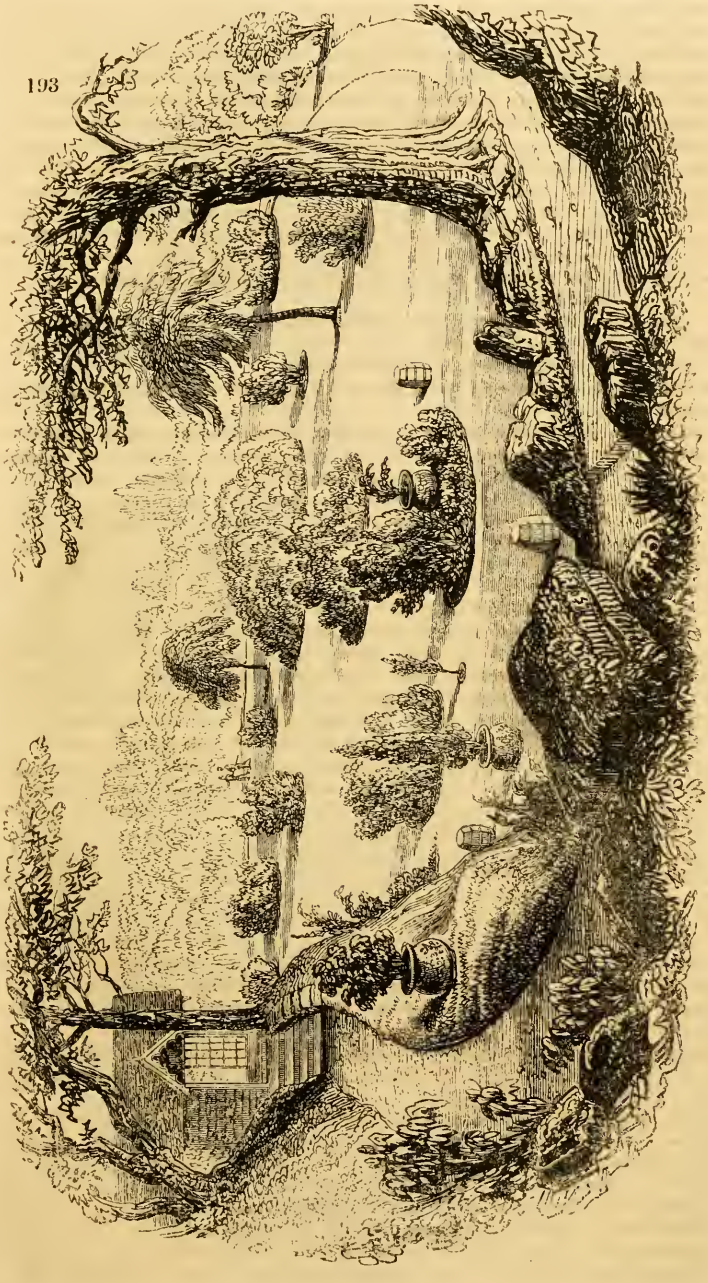

English Garden and Summer-house.

trees, but have their young shoots projecting out like a camellia hedge; and the intensely dark green of their leaves, and the profusion of flowers which they produce under this treatment, show how well it is adapted to them. In general, it may be observed that these conservatories exhibit the true kind of beauty which a conservatory ought to produce; viz. free, luxuriant, and seemingly uncontrolled growth; presenting everywhere a picturesque appearance, and directly opposed to the beauty of the green-house, in which the plants are kept in pots on stages, and in which trimness, neatness, and the close training of climbers (in a word, the gardenesque), ought everywhere to prevail. It may be useful, both to amateurs and to gardeners, to bear in mind these distinctive characters of the conservatory and the green-house. The orangery presents an aspect somewhat different; because the plants, instead of being in small pots on stages, are in large pots, boxes, or tubs, and, for the most part, placed on the floor: but still the arrangement of the interior is everywhere guided by the principles of the gardenesque.

o, Vinery and plant stove.

p p p, Rock-walk, giving a general view of the rockwork garden.

q q &c., Beds of prepared earth, raised above the surface, and supported by large blocks of stone, forming an irregular rocky margin to each bed.

r, A well, or basin, supplied by a spring, and furnishing abundance of water for watering the plants.

r s, Direction of an excavation of 8 or 10 feet, forming an irregular precipice on the side next the house, with a bottom sloping in the opposite direction, from which all the rock was obtained for paving the rocky walk, and enclosing the raised beds. In the views from the windows of the house, none of this rockwork appears; the ground at *t t t* being sufficiently high to carry the eye over it to *u*. The plants in the rocky beds are partly half-hardy; such as fuchsias, myrtles, and other shrubs generally planted against conservative walls; magnolias; a fine collection of azaleas and rhododendrons, particularly on the rocky precipices; *Bérberis*, Mahònia, Gárrya, and, in short, all the finer shrubs that are rather tender, and some of the more rare trees. There are also some fine specimens of perfectly hardy shrubs; such as of Cotoneáster U'va-úrsi and Juníperus Sabìna rèpens; the latter covers an entire bed. Among the more rare trees in the rocky lawn, *fig.* 194., was one of *P*ìnus sinénsis, raised by Mr. Wells from seeds imported from China in 1829, and which had attained the height of 16 ft., and produced cones, before it was killed by the severe winter of 1837-8. Araucària imbricàta is here quite hardy; and *P*ícea Webbìàna has attained a considerable size, though much injured by the same winter. There are also remarkably fine specimens of *A*'bies Douglàs*ii*, and of various other species of pines and firs. There are some remarkably fine young cedars, which, in 1837, when measured for the *Arboretum Britannicum*, were from 36 ft. to 52 ft. in height. One of these, which had been raised from seed exactly twenty years before, the cone having been purchased in a London seed-shop in 1816, was, in 1836, 36 ft. high, and the girth of the trunk, at 3 ft. from the ground, was 4 ft. 6 in. Another, 27 years planted, was 52 ft. high, with a trunk of 5 ft. 6 in. in circumference at 3 ft. from the ground. Among the herbaceous plants were most of the Californian annuals and heartseases, and all the finer half-hardy plants, such as petunias, lobelias, &c., and a great variety of pelargoniums. In short, if the reader imagine all the plants introduced into this country that it is desirable to cultivate in a flower-garden, or against a conservative wall, and in a select shrubbery, he will form a good general idea of what were planted on the rocky lawn at Redleaf.

v, Engine-house, fixed over a pond, for throwing up water to the house.

w w, Wood, in which many species of exotic trees and shrubs are introduced among the native kinds.

x x, Wire fence, which separates the mown lawn from the pasture lawn.

y, Pasture lawn; the surface of which is beautifully undulated, and finely varied by groups of oaks, thorns, and other trees. The thorns are, in some instances, of great age, and are often covered with a profusion of mistletoe, which in the winter season gives them the appearance of evergreen trees, and in spring interferes with that general covering of blossom, which, from its uniformity and whiteness, sometimes gives a large hawthorn the appearance of an immense cauliflower, or gives a spotty appearance to the landscape. We may observe, here, that there are various scarlet thorns distributed through these

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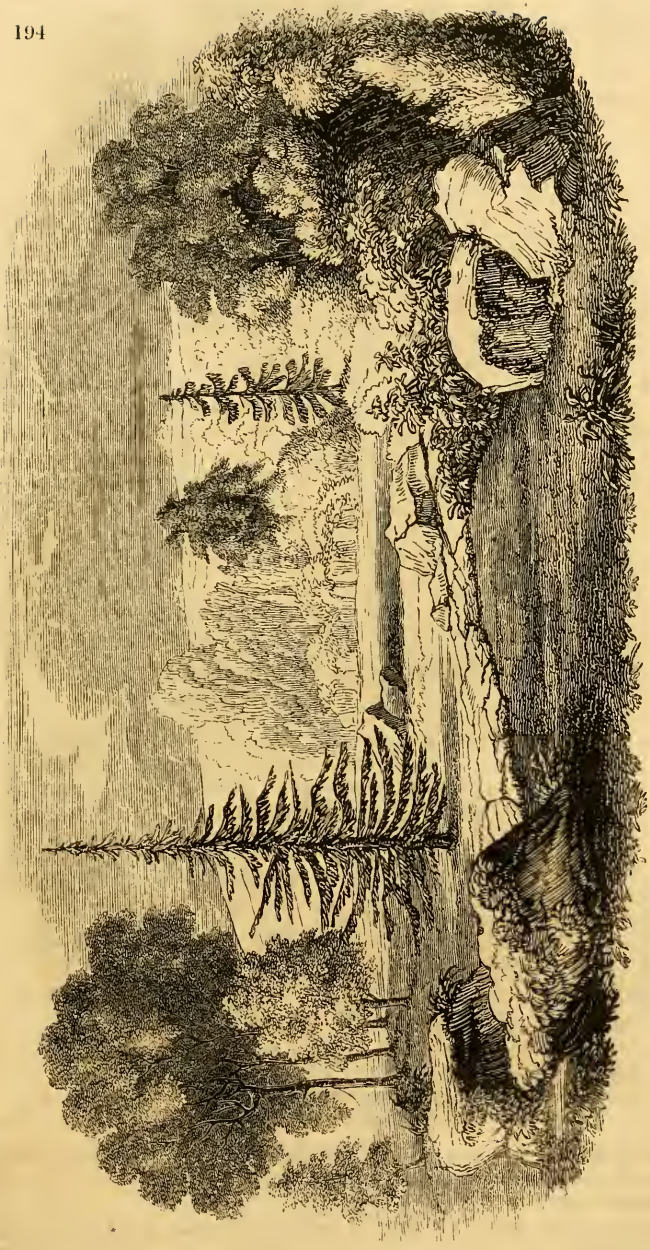

Entrance to the Rocky Lawn from the English Flower Garden.

The rocky precipice is slightly indicated in the middle distance, and the rocky walk in the foreground. The tree on the left is a cedar, in 1837 upwards of 30 ft. high.

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View across the Rocky Lawn, showing the Descent of the Rock Walk to the Rocky Hollow.

grounds; that two of them, in front of the Penshurst Lodge, are of an intensely dark red; and that others, which are seedlings of these, present different shades of colour, some being only a pale pink.

390. *Remarks.*—The most original feature at Redleaf, as we have already observed, is the rocky lawn; and respecting it there are several points which

require to be noticed. In the first place, a slight scar, or protruding rock, which appeared above the surface before any of the improvements were commenced, indicated that the same rock was abundant beneath the surface; secondly, the general slope of the grounds admitted of making a large excavation at this scar, and yet preserving the surface perfectly dry; thirdly, this excavation enabled Mr. Wells to get an extensive flower-garden near the house, which, at the same time, should not be seen from it; and, fourthly, this lawn was in harmony with the rocky bank in the English garden, and with the ledge or causeway in the rocky valley (*fig.* 195.); which ledge may be said to form, as it were, the key-note to the place. The suitableness of the stone walk to this rocky garden is worthy of notice; not only does the material harmonise with the margins of the beds, and the rocky bank, better than gravel would have done, but, being on a steep slope, it is not liable to be washed away, as that material would have been, by every shower of rain. The walk is formed by flat laminæ of the sandstone, from six inches to a foot in thickness, not very even on the surface, and joined together in the most irregular forms, like the lava pavements in Portici, and other towns in Italy. The stones rise from 3 in. to 9 in. above the surface of the grass; the width averages from 4 ft. to 5 ft.; but sometimes, where very large stones occur, the walk is double that height. We are, however, inclined to think that, if this rocky walk only rose an inch or two above the surface, instead of 6 or 8 inches, the effect would be better, and the walk would have the appearance of being more solid and secure, and it would also be less conspicuous at a distance. One practice which is adopted at Redleaf is, that, in every part of the garden scenery where the slope is considerable, the walks are paved with brick, and have brick or stone edgings. Some great advantages result from this practice. The walks are never injured by rain, but rather improved by being washed clean; and, as no weeds can grow in them, nor can they get soft with rain, nor powdery with dry weather, they never require rolling. Gravel walks must be turned or partially renewed every two or three years; and the box, which is annually clipped, should also be taken up and replanted, sometimes every six or seven years. Brick or flagstone walks, or walks of asphalte, however, with brick or stone edgings, if properly laid at first on a solid foundation, and with such drainage as will admit of no water stagnating beneath the bricks, will last ten or twelve years, without any repairs whatever.

Design XXVIII. *Plan and Description of the Grounds at Hoole House, near Chester, occupied by Lady Broughton.*

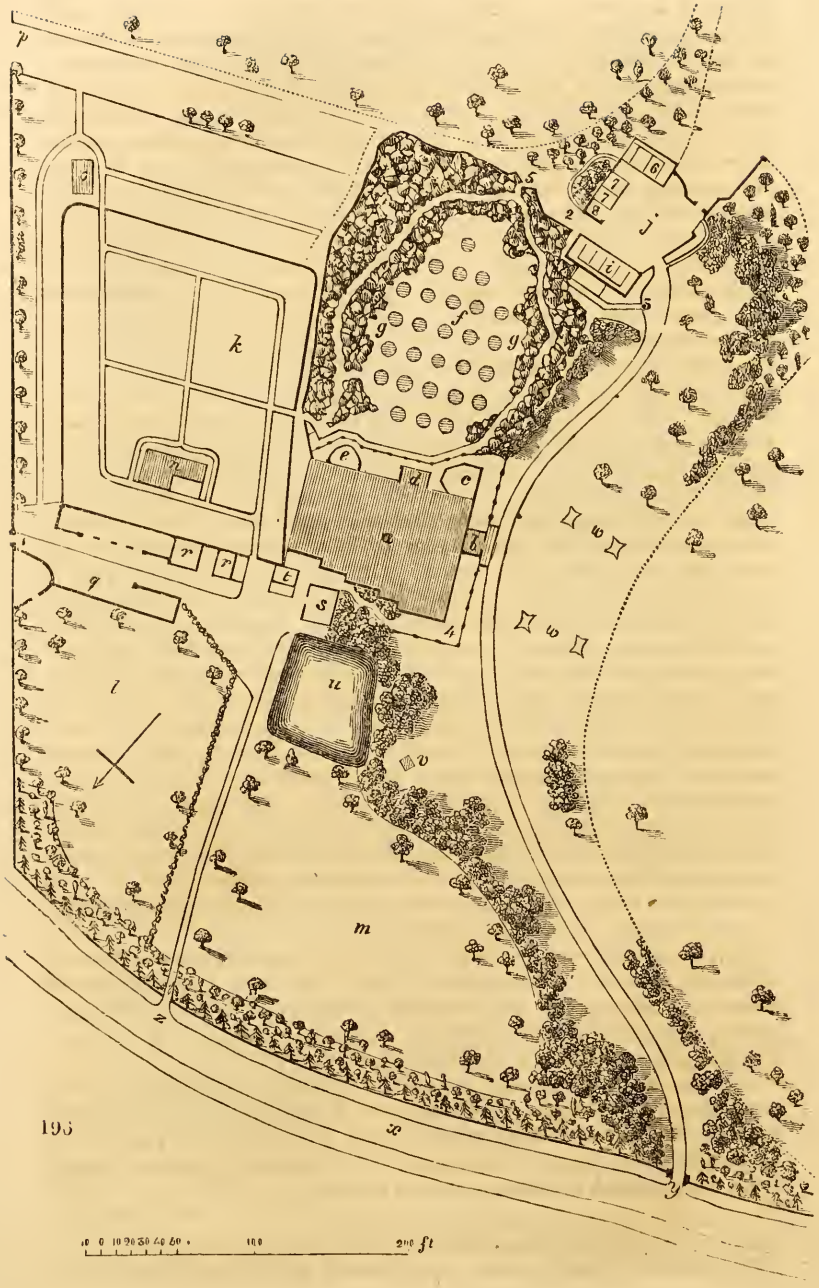
391. *General observations.*—Hoole is situated about two miles from the city of Chester, on the road to Liverpool. The extent of the place is between twenty and thirty acres; and it is arranged as a farm, a lawn, a kitchen-garden, and a flower and rock-garden, the latter being one of the most remarkable specimens of the kind in England.

392. *Description, &c.*—The surface of the ground at Hoole is flat, and the soil a rich loam. In the extreme distance, in one direction, are seen the Welsh mountains; in another, the Peckforton Hills and Beeston Castle. The general plan of that part of the ground which lies round the house is shown in *fig.* 196., to which the following letters refer:—

a, The house, of which the elevation is given in *fig.* 197.

b, A conservatory forming the front entrance, as shown on a larger scale in *fig.* 197.

c, Camellia house, of which a ground plan is shown in *fig.* 199., an elevation in *fig.* 198.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and a plan of the roof in *fig.* 200. In the ground plan (*fig.* 199.), *a* is the entrance from the veranda; *b b*, shelf for plants; *c*, stage for plants; *d d d*, veranda; and *e*, the drawing-room.

d (in *fig.* 196.), Drawing-room window, which looks on the flower-garden.

e, Geranium-house; the communication between which and the camellia-house is by the veranda *d*, in *fig.* 199.

f, Flower-garden, the view of which, from the drawing-room window, is shown in *fig.* 201.

g g, The rockwork surrounding the flower-garden.

h, Walk midway up the rockwork, but concealed from the eye below by the rocks between it and the flower-beds.

i, Stable. *j*, Stable-yard. *k*, Kitchen-garden. *l*, Reserve-garden.

m, Grass field. *n*, Gardener's office and green-house.

o, Under gardener's room. *p*, Back entrance to the stable-yard.

q, Soil yard. *r r*, Back shed and other conveniences. *s*, Coal-house.

t, Ice-house. *u*, Pond. *v*, Bee-house.

w w, Flower-baskets on the lawn. *x*, Road to Chester.

y, Entrance-gate to the approach-road. *z*, Back approach.

1, Back approach to the garden.

2, Archway between the rock and the stables.

3, Back entrance to the flower-garden. 4, Pavement under the veranda.

5, Back door to the rockwork and flower-garden. 6, Cow-house.

7 7, Coach houses. 8, Harness-room. 9, Shrubbery.

Fig. 202. is a view of the highest part of the rockwork, from the centre of the flower-garden. The highest point is in the south-east angle, where it is 34 ft. above the level of the lawn.

Fig. 203. is a view of the rockwork, the lawn, and the camellia-house, from the rock-walk in the north-east angle.

393. *Remarks.*—The striking effect produced by the flower-garden at Hoole depends on the contrast between the smooth flat surface of the lawn, with the uniformity of the circular beds, and the great irregularity of the surrounding rockwork. The length of the flower-garden, within the rocky boundary, is 60 yards, and the breadth 34 yards. The baskets, twenty-seven in number, are in five straight rows, and each basket is a circle of 9 ft. 5 in. in diameter. They are made of wire, worked on an iron rod, the rod being placed upon small pegs, to keep the basket to the level of the grass; and they are painted a yellow stone colour, to harmonise with the rocks and the veranda. They stand 8 in. above the ground, the grass coming close to the iron rod. The distance between each, across the garden, is 4 ft., and down the garden, 8 ft. 10 in. They are planted with spring, summer, and autumn flowers mingled together; and the spaces left, when those are over, are filled with green-house plants, viz. geraniums, verbenas, &c., German stocks, and tender annuals, which keep up the colour until the frosts destroy them: the hardy perennials remain for the next season.

394. *The design of the rockwork* was taken from a small model representing the mountains of Savoy, with the valley of Chamouni: it has been the work of many years to complete it, the difficulty being to make it stand against the weather. Rain washed away the soil, and frost swelled the stones: several times the main wall failed from the weight put upon it. The walls and the foundation are built of the red sandstone of the country; and the other materials have been collected from various quarters, chiefly from Wales; but it is now so generally covered with creeping and alpine plants, that it all mingles together in one mass. The outline, however, is carefully preserved;

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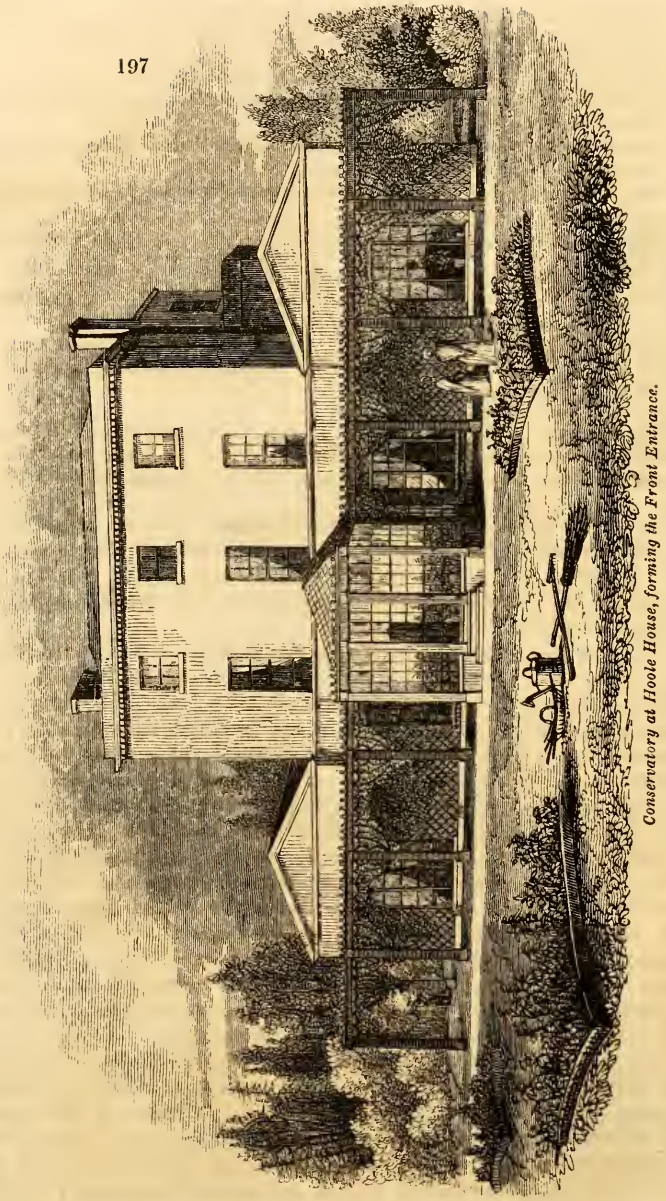

Conservatory at Hoole House, forming the Front Entrance.

and the part of the model that represents "La Mer de Glace" is worked with grey limestone, quartz, and spar. It has no cells for plants: the spaces are filled up with broken fragments of white marble, to look like snow; and the

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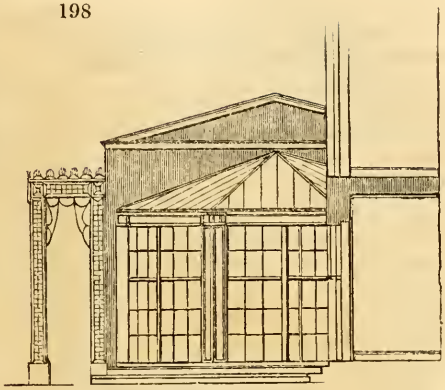

spar is intended for the glacier. On the small scale of our engravings, and without the aid of colour, it is altogether impossible to give an adequate idea of the singularity and beauty of this rocky boundary; and we may add that it is equally impossible to create anything like it by mere mechanical means. There must be the eye of the artist presiding over every step; and that artist must not only have formed an idea of the previous effect of the whole in his own mind, but must be capable of judging of every part of the work as it advances, with reference to that whole. In the case of this

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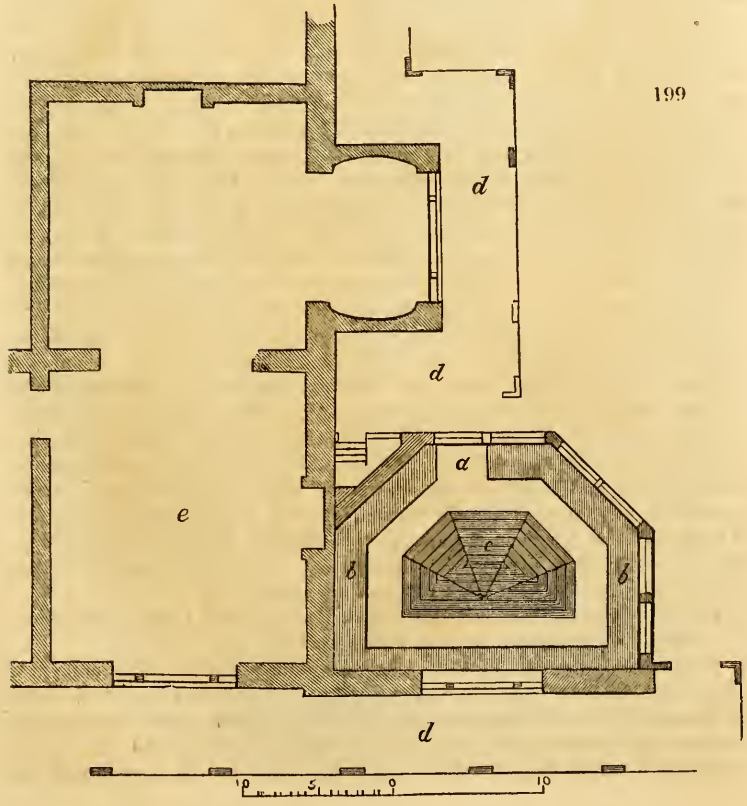
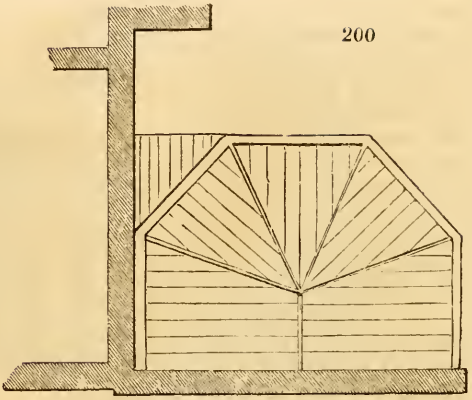


rockwork, Lady Broughton was her own artist; and the work which she has produced evinces the most exquisite taste for this description of scenery. It is true it must have occupied great part of her time for six or eight years; but the occupation must have been interesting, and the result, as it now stands, must give her Ladyship the highest satisfaction.



395. *The rockwork is planted* with a selection of the most rare and beautiful alpines, particularly with all the close-growing kinds; each placed in a nidus of suitable soil, and the surface protected from the weather by broken fragments of stone, clean-washed river gravel, the debris of decaying rock, moss, or other suitable substances, according as the object was to retain moisture; to evaporate moisture, in order to prevent the plants from damping off; to increase the heat, in which case dark fragments of stone are used; or to diminish it, which is effected by the employment of white pebbles, which, by reflecting the light and heat, keep the ground cool. The following is a list of the principal genera:—Saxifrages, sedums, *C*istus, pansies, rock pinks, anemones, Dry̆as, *M*yosòtis, heaths, violas, *L*y̆chnis alpìna, *E*rìnus, Frankèn*ia* læ'vis, campanulas, ajugas, alyssums, anemones, *O*'xalis, hepaticas, antirrhinums, aquilegias, *A*'rabis, aretias, asters, *A*strágalus, armerias, *A*nagállis, Cheiránthus alpìnus, Cerástium, claytonias, Convallària bifòlia, Cóptis trifòlia, *C*ornus canadénsis, Cortùs*a* Matthìol*i*, cyclamens, Calceolària Fothergílli, drabas, erodiums, *G*àlium græ'cum, Gaulthèr*ia* procúmbens, globularias, crane's-bills, gypsophilas, gentians, hieraciums, hypericums, Hippocrèpis, Jeffersòn*ia* diphy̆lla, *L*áthyrus, *L*òtus, Leóntodon aúreum, linums, mitellas, Mœhring*ia* muscòsa, menziesias, Orníthopus dùrus, *O*nònis, *O*nósma, *O*'robus, pinguiculas, phyteumas, pyrolas, potentillas, primulas, *P*ìsum marítimum, *P*oly̆gala Chamæbúxus, *R*ùbus árcticus, Aubrièt*ia* purpùrea, Saponària ocymöìdes, *S*álvia pyrenàica, statices, silenes, soldanellas, Solidàgo minùta, *B*éllis minùta, *Te*ùcr*ium* pyrenàicum, Tiarélla cordifòlia, Mitélla diphy̆lla, Trientàlis, *T*hy̆mus córsica, dwarf veronicas. The evergreens are chiefly yews, privets, laurels, arbutus, rhododendrons, brooms, cedars, box, daphnes, laurustinus, &c.; to which are added azaleas of every kind, and various other low-growing shrubs.

Design XXIX. *Plan and Description of Dunchurch Vicarage, Warwickshire, the residence of the Rev. J. Sandford.*

396. *General observations.*—The vicarage grounds lie along the churchyard, from which they are separated by an open fence, so that the churchyard forms, as it were, a part of the pleasure-ground. The general surface, both of the vicarage and churchyard, is flat, but the soil is excellent, and there is an agreeable declivity from the lawn front of the house to the boundary of the

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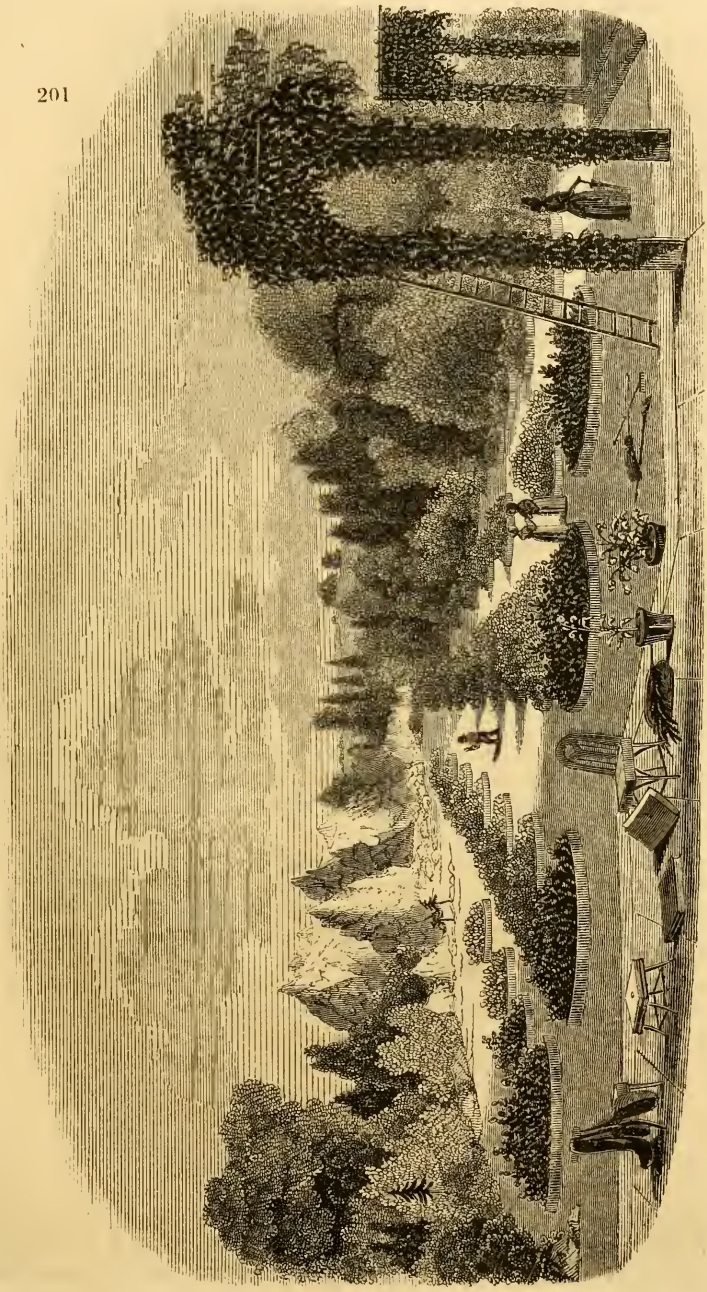

Flower-garden at Hoole House, from the drawing-room window.

Rockwork at Hoole House, from the centre of the Flower-garden.

property. The living was taken possession of by Mr. Sandford only a few years ago, on which occasion that gentleman consulted us professionally, and sent us the ground plan of the place in the state it then was. We made some

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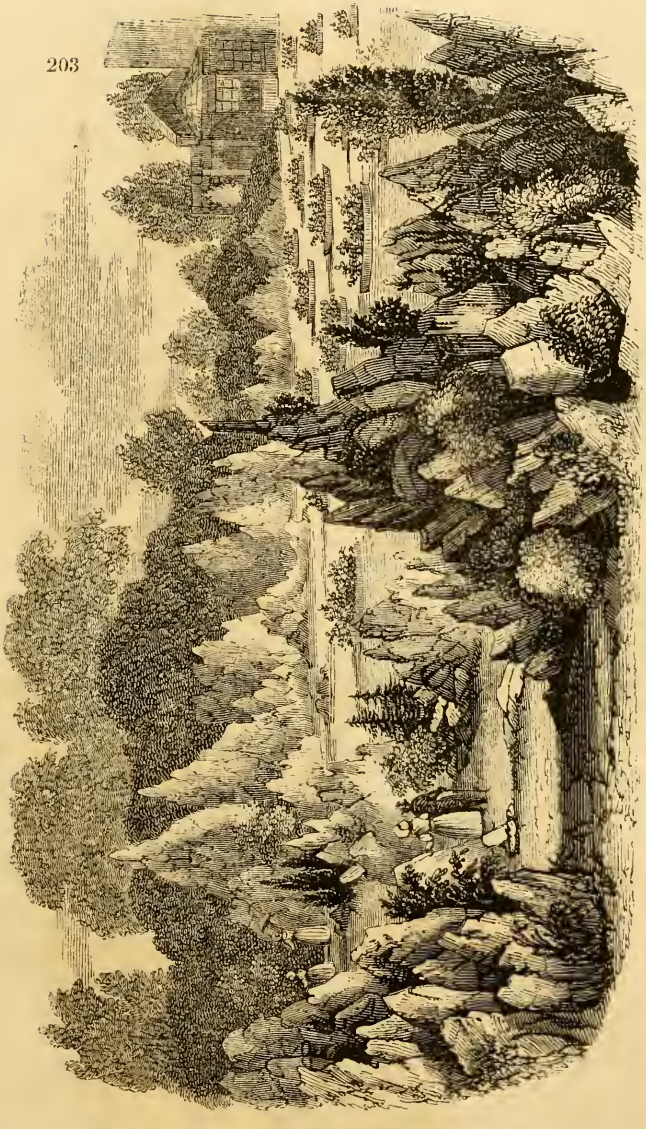
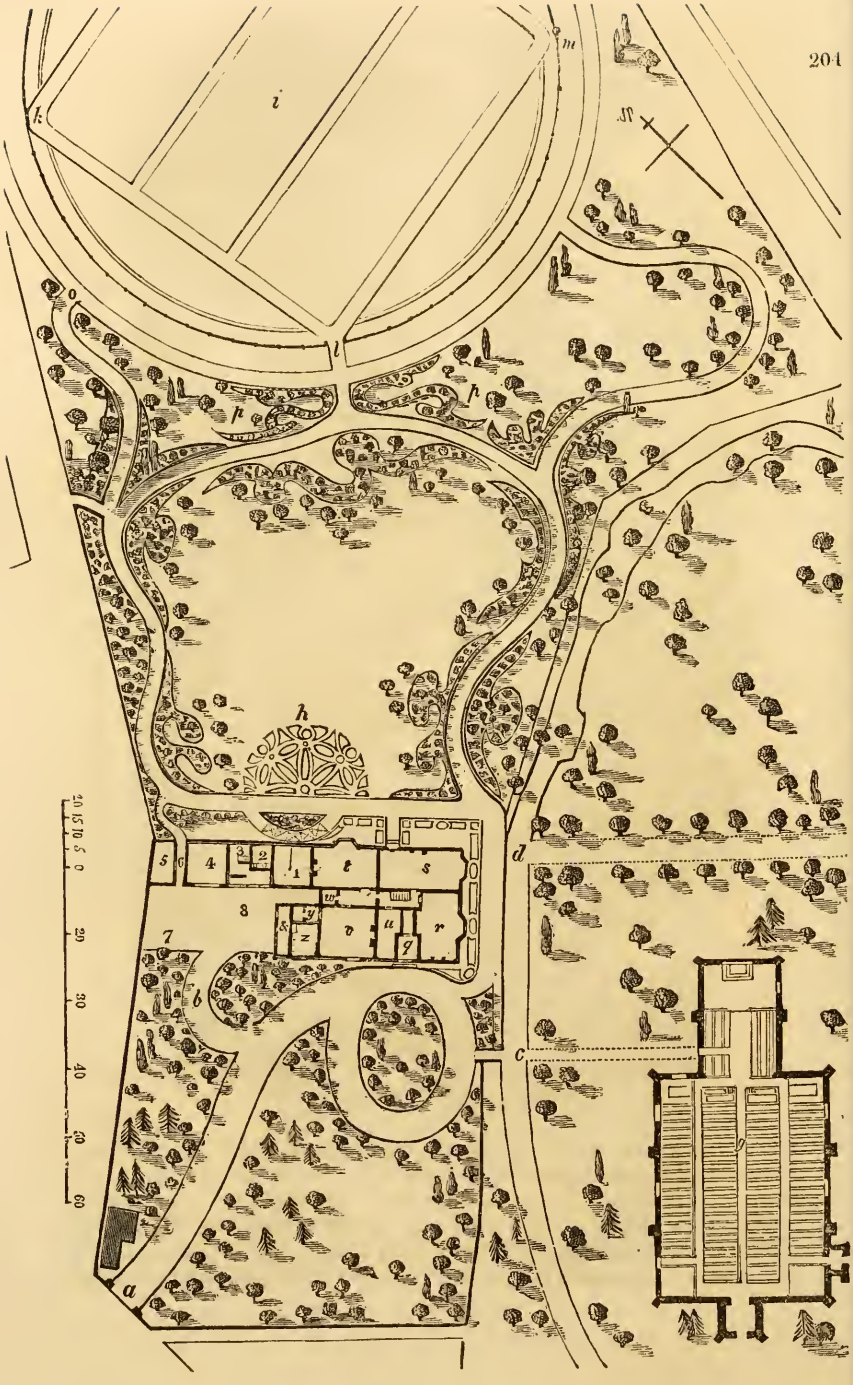


Rockwork, Lawn, and Camellia-house, at Hoole House, from the North-east.

slight alterations in the position of the entrance gates, and in the direction of the approach; and suggested the idea of forming a circular kitchen-garden; the circle being the largest geometrical figure that could be introduced into the particular spot where it was placed. As the situation of this kitchen-garden is at no great distance from the front of the house, in order to prevent the intrusion of a garden wall so near the eye, we proposed having that half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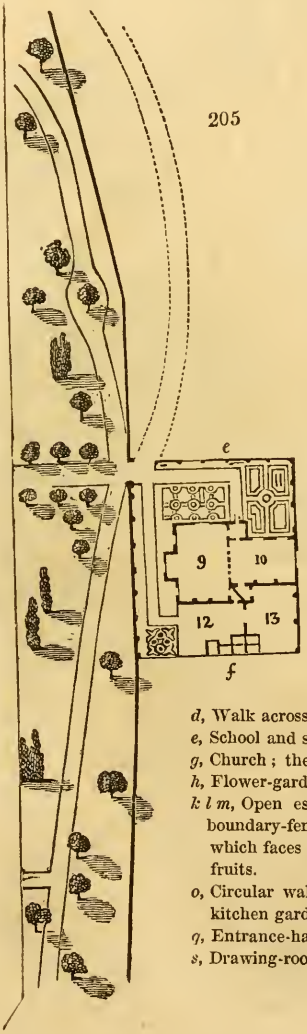
of the kitchen-garden boundary which is next to the lawn an open iron railing, which, being partially covered with fruit trees, and disguised by the shrubs which intervene between it and the house, would neither give the idea of nearness to the eye, which a wall would have done, nor of confinement. Some difficulty occurs in carrying a walk round the boundary of a churchyard, in consequence of the numerous gravestones which would come in its way; but the most likely way to get over it appears to be, the expanding of the walk on both sides of the regular line, on the principle recommended in a preceding page. The house has been improved under Mr. Sandford's own direction, and is now a most commodious and comfortable residence, as the ground plan will show; and a very handsome school has been erected adjoining the churchyard at Mr. Sandford's own expense.



397. *Ground plan, &c.—Figs.* 204. and 205. represent the general ground plan of the buildings and grounds, and *fig.* 206. is an isometrical view. In the ground plan, it will be seen that all the effect produced by the trees is the result of single trees and small groups; that these are most abundant on each side of the approach on the entrance front of the house, and in the churchyard; and that the groups on the lawn are chiefly shrubs and flowers. With respect to the kinds of trees, those in the entrance front are in great part fruit trees; those in the churchyard, trees of the third rank, with regard to size, some of which have been already enumerated in a preceding page; and those on the lawn, and around the kitchen-garden, embrace so great a variety, both of trees and shrubs, as to constitute a tolerably good collection.

a, Carriage entrance and lodge; the trees on each side being chiefly fruit-bearing kinds, and ornamental trees, such as thorns, &c., of moderate size.
b, Entrance to the offices.
c, Walk from the vicarage to the church.
d, Walk across the churchyard to the school.
e, School and school gardens. *f*, Paddock.
g, Church; the details of the plan within the walls are imaginary.
h, Flower-garden on the lawn. *i*, Kitchen-garden.
k l m, Open espalier railing for fruit-trees; the remainder of the boundary-fence to the kitchen-garden is a fruit-wall of brick, which faces the south-east, and is, therefore, suitable for the finer fruits.
o, Circular walk bounding an outside border to the fence of the kitchen garden. *p p*, Beds of low flowering shrubs.
q, Entrance-hall of the house. *r*, Dining-room.
s, Drawing-room, with a window opening to the lawn.

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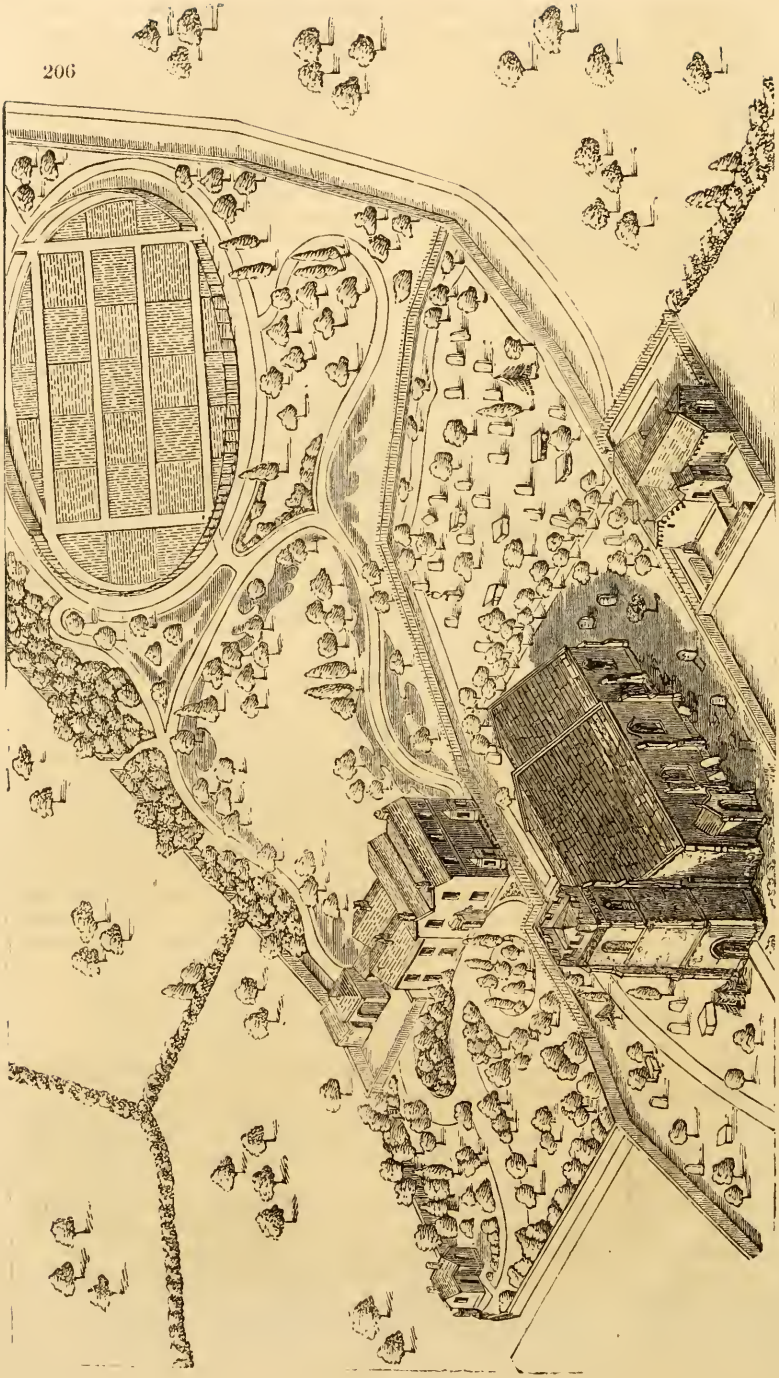

t, Library and study. *u*, Gentlemen's room. *v*, Kitchen.
w, Butler's pantry. *y*, Larder, and cold meat safe. *z*, Scullery. *&*, Dairy.
1, Stable. 2, Best privy, approached under trelliswork, from the lawn front. 3, Servants' privy, with a screen wall, which completely protects the entrance door from being seen from any part of the kitchen-court.
4, Coach-house. 5, Coal-house. 6, Entrance to the garden for workmen, and for the convenience of wheeling the stable dung to the kitchen-garden by the side-road, *o*.
7, Situation of the dung-pit, and liquid manure tank. 8, Open court, containing wood-stack, pump, &c. 9, Boys' school, 33 ft. by 20 ft. 10, Girls' school, 28 ft. by 18 ft.
11 11, School gardens, intended to contain a collection of the more common English plants, especially those of the locality, and also a collection of the more dangerous poisonous plants; the whole carefully named.
12, Boys' yard with conveniences. 13, Girls' yard with conveniences.

DESIGN XXX.—*Plan and views of the garden and grounds at Hendon Rectory, with the mode of planting them.*

398. *General observations.*—This residence is selected in order to show what may be effected on a very small spot by the choice of trees and shrubs of a superior description, by the distribution of green-house plants in tubs and pots, and also by combining the gardenesque with the picturesque. There is nothing remarkable in the art or taste displayed in laying out this place; that having been done before the present occupier, the Rev. Theodore Williams, had acquired a taste for botany and gardening. On the other hand, the selection of the plants grown in pots, boxes, and vases, and their disposition on the lawn; the kinds of trees and shrubs planted in the masses and groups; and the manner in which these are managed; display the greatest taste, and a degree of care and high keeping in the management, which is very rarely to be met with in either small or large gardens. Mr. Williams, considering that, in all works of art, and in all natural objects which are to be examined singly, one of the greatest beauties is symmetry, has those trees and shrubs which he manages in a gardenesque manner brought into the most perfectly symmetrical forms, by tying the branches up or down, inwards or outwards, as may be necessary, with small, almost invisible, copper wire; by which means, not only every plant in a tub or a pot is perfectly symmetrical, whatsoever be its form, but those trees and shrubs which stand singly on the lawn, or compose gardenesque masses, are individually so treated; and, standing as they do a few inches apart from each other, the separate shape of each plant is seen by the spectator. The same care is bestowed on the dahlias, which are here grown in large quantities, and of sorts most of which were raised under the direction of Mr. Williams, from seeds saved in his own garden. That which renders Hendon Rectory altogether unique in a gardening point of view is, a collection of Coníferæ in pots. These Coníferæ are in part set out on the lawn in the summer season, and in part kept under glass; and all of them are trained into the most beautifully symmetrical shapes that are anywhere to be seen. As the pine and fir tribe is liable to be attacked by insects in the summer season, it is the business of one gardener to attend entirely to them and to the Cupréssinæ; in other words, to the pines, firs, cedars, araucarias, dammaras, cypresses, dacrydiums, junipers, and arbor vitæs, in pots. They are thus kept regularly watered, accurately tied into shape, and perfectly free from insects. Some of the plants of this kind at Hendon Rectory are of great value; one, a dacrydium, in particular, is matchless for its size, beauty, and rarity. The same plan of

dividing the labour of the place is adopted with reference to the dahlias, which, from the day they are planted out till the time the roots are taken out of the ground, are constantly under the care of one individual. Another man is solely occupied in propagating by cuttings or otherwise; and one is kept as a man of all work, to assist the others, and to look after the walks. The duty of the head gardener is to see that the rest perform the several works assigned to them, and, in general, to be careful that the whole is kept in perfect health and order.

The fence which separates the grounds of Hendon Rectory from the road which leads from Hendon to Mill-hill, is of oak pales; and the main entrance is through a door, also of oak. Besides the garden, the property consists of a grass field, of 3 or 4 acres, surrounded by an irregular hedge with oaks and elms, which harmonises so well with the adjoining fields similarly enclosed, that the limits of the property are no way discernible. The details of the plan (*fig.* 208.) are as follow:

a, Principal entrance. To the left is shown a small path in an ogee direction, leading to a door, opening into the court of offices (*m*).

b, A point, from which the view *fig.* 207. is obtained.

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View at Hendon Rectory.

c, A point, where the spectator, having his back to the house, sees before him a narrow strip of lawn, with handsome symmetrical plants of the following kinds:—Next the entrance door, Taxòdium distichum; then *Sophòra* japónica péndula; next, *Pinus Mùghus*, Dáhl*ia*, Taxòdium dístichum nùtans, Dáhl*ia*, *Pinus* rígida, Taxòdium dístichum pàtens. Beyond this, there is a row of dwarf hybrid rhododendrons, as a margin to a bank of common laurel, cut smooth above, with standard roses, and other trees, all cut into symmetrical

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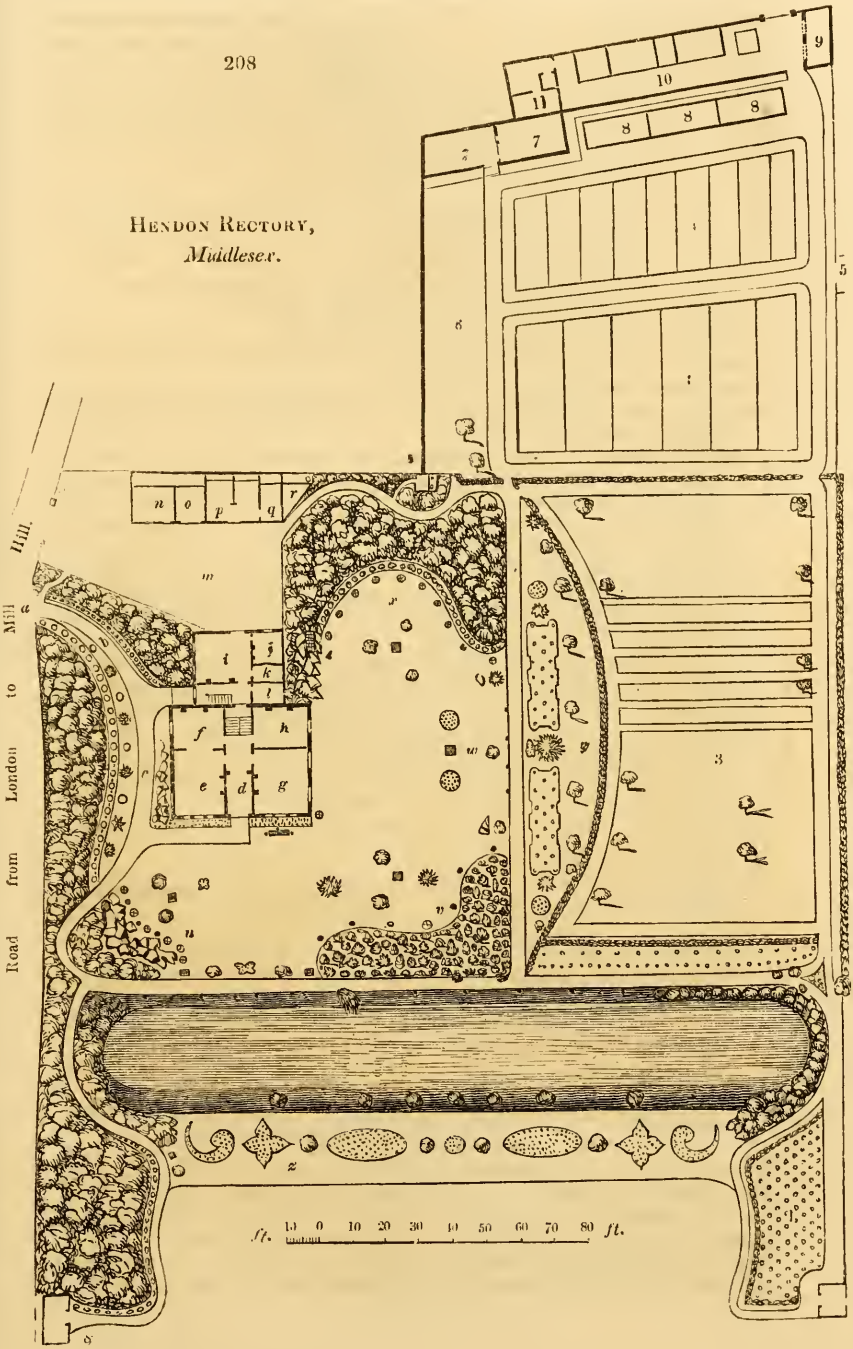
Hendon Rectory,
Middlesex.



roundish forms, rising through it, as seen in *fig.* 207., which forms a very singular phalanx of objects, and serves to occupy the mind of the spectator, and prevent his recollecting that he is so very near the boundary and the public road. Turning round, with the face towards the house, a number of rare and beautiful plants are displayed on a rockwork composed entirely of crystallised spar. The walk turns round to the entrance to the house; which circumstance corresponds well with its cottage and unobtrusive character, and is, in reality, as we think, in better taste than if the walk had been conducted to the main entrance, with a sweep like that of a carriage approach.

d, The entrance lobby of the house. *e*, The dining-room.

f, The library, which opens into the dining-room with folding doors; both rooms being intended for books. *g*, The drawing-room.

h, Study. *i*, Kitchen. *j*, Back-kitchen. *k*, Pantry. *l*, Dairy.

m, Court, common to the kitchen and stables, with folding gates to the public road.

n, Justice-room. *o*, Coach-house. *p*, Two-stalled stable.

q, Harness-room. *r*, Dust-hole.

s, Servants' privy, entering from a winding walk, which passes from the stable court to the garden.

t, Situation where there is a handsome Gothic aviary partially concealed by bushes, and containing a good collection of birds; Mr. Theodore Williams, jun., being much attached to the study of ornithology.

u, A point round which there is a constellation of rare and beautiful trees and shrubs in pots, besides various statuary and sculpturesque objects. Among the hardy trees are, Photinia serrulàta and *Pinus Pallasiàna*; and among the green-house plants, in pots and vases, are, oranges, myrtles, fuchsias, tree rhododendrons, &c. The view from this spot, looking towards *v*, is indicated in *fig.* 209.

v, A gardenesque plantation, in which every tree and shrub is kept distinct, and every one trained into a symmetrical shape. The mass gradually rises from the height of 2 ft. round the margin, to the middle, which is 7 or 8 feet high. Among the plants in this gardenesque mass are the following:

Magnoliàceæ.

Magnòlia tripétala, 12 ft. high, and 6 ft. in diameter.

M obovàta.

M. acuminàta, 9 ft. high, and 8 ft. in diameter; in bog soil and silver sand.

M. glaúca, 7 ft. high, and 3½ ft. in diameter; in bog and loam.

M. macrophýlla, 5½ ft. high, and 1½ ft in diameter; in bog and loam.

M. Thompsoniàna, 14 ft. high, and 6 ft. in diameter; in loam, bog, and silver sand.

M. exoniénsis, 5½ ft. high, and 3½ ft. in diameter; in bog, loam, and sand.

Winteràceæ.

Illícium floridànum, 3½ ft. high, and half a foot in diameter; in bog and silver sand.

Berberàceæ

Bérberis fasciculàris, 3 ft. high, and 2 ft. wide; in loam, bog, and silver sand.

Pittosporàceæ.

Pittósporum *Tobìra*, 3 ft. high, and 3½ ft. wide; in loam, bog, and sand.

Ternströmiàceæ.

Camélia japónica quadrangulàris, 6½ ft. high, and 3½ ft. in diameter; soil half loam, and half bog and silver sand.

C., double red, 5½ ft. high, and 4 ft. wide; half loam, and half bog and silver sand.

C., double white, 3½ ft. high, and 2½ ft. wide; soil half loam, and half bog and silver sand.

C., single, 5 ft. high. and 4 ft. wide, in loam, dung, and grit.

Thèa víridis, 1½ ft. high, and 2½ ft. wide.

Æsculàceæ.

Pàvia rùbra, 15 ft. high, and 9 ft. wide; in loam, dung, and grit.

Aquifoliàceæ.

*I*lex, yellow painted holly, 5½ ft. high, and 3½ ft. wide; in loam, dung, and grit.

I., white-margined holly, 5 ft. high, and 5 ft. wide; in loam.

I. Cassìne, 5 ft. high, and 4 ft. wide; in loam and grit.

I., milkmaid holly, 6 ft. high, and 3 ft. wide; in loam, dung, and grit.

I. angustifòlia, 7 ft. high, and 3½ ft. wide; and *I.* a. scótica, 6½ ft high, and 3½ ft. wide; in loam, bog, and silver sand.

I. Dahoón, 7 ft. high, and 3½ ft. wide; in loam, bog, and silver sand.

I. Peràdo, 6½ ft. high, and 3 ft. wide; in loam, bog, and silver sand.

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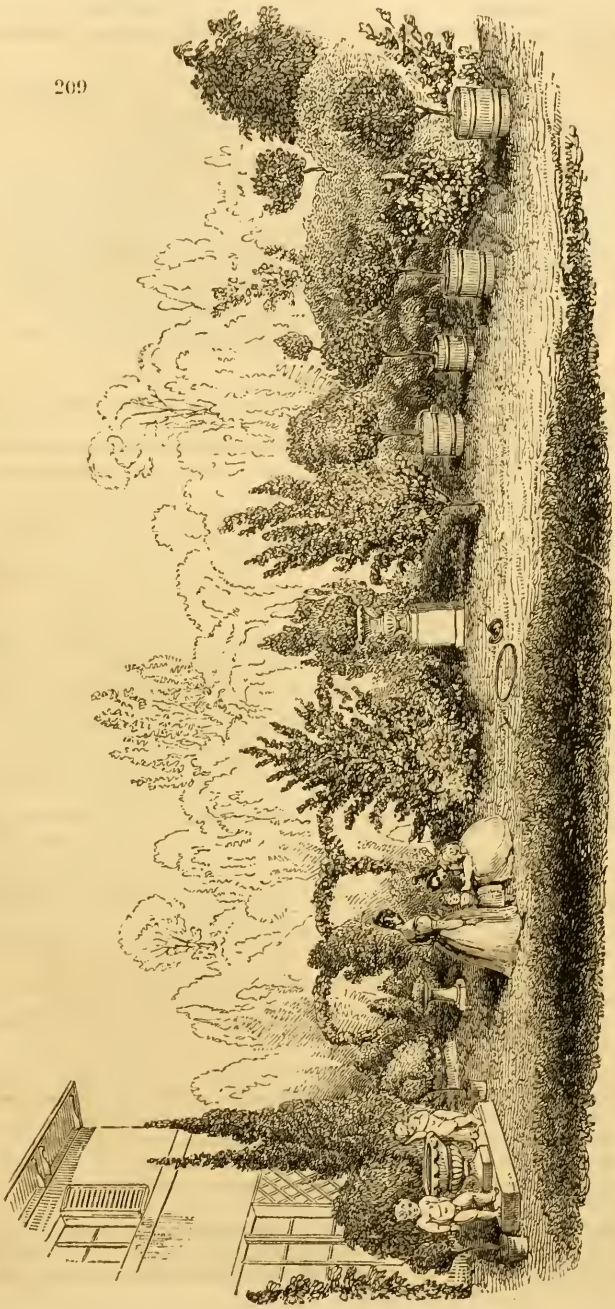

View at Hendon Rectory.

Rhamnàceæ.

*Rh*ámnus *Al*atérnus fòliis argénteis, 7 ft. high, and 4 ft. wide; in loam, bog, and silver sand.

Leguminòsæ.

*Cy*tisus pygmæ'a, 6½ ft. high, and 1½ ft. wide; in loam and bog.

Halimodéndron argénteum, 7½ ft. high, and 3½ ft. wide; in loam and bog.

Rosàceæ.

Photínia serrulàta, 12½ ft. high, and 5½ ft. wide; in loam, bog, and silver sand.

Araliàceæ.

*Hé*dera arboréscens, 4½ ft. high, and 4 ft. wide; in loam and dung.

Cornàceæ.

*Vi*búrnum *T*inus, 6 ft. high, and 4 ft. wide.

V. T. lùcida, shining-leaved, 5½ ft. high, and 5 ft. wide.

Loranthàceæ.

Aúcuba japónica, 5½ ft. high, and 4 ft. wide; in loam, bog, and sand.

Ericàceæ.

*A'*rbutus hýbrida, 7 ft. high, and 4 ft. wide; in loam and silver sand.

A., Pince's hybrid, 4 ft. high, and 3 ft. wide; in loam, silver sand, and bog.

A. procèra, 4 ft. high, and 3 ft. wide; in loam, silver sand, and bog.

A., scarlet, 6 ft. high, and 5½ ft. wide; in loam, silver sand, and bog.

*Rh*ododéndron, scarlet hybrid, 4½ ft. high, and 4½ ft. wide; in bog and silver sand.

R. azaleoïdes, 6½ ft. high, and 4 ft. wide; in bog.

R., white, 4½ ft. high, and 4½ ft. wide; in bog.

R. altaclerénse, 5 ft. high, and 5 ft. wide; in bog and silver sand.

R. caucásicum, 6½ ft. high, and 2 ft. wide; in bog and silver sand.

R., yellow variety, 3½ ft. high, and 3 ft. wide, in ditto; and 16 other hybrid varieties, the greater part scarlet flowered.

Vaccínium Arctostáphylos, 6 ft. high, and 4½ ft. wide; in bog.

Sapotàceæ.

Bumèlia tènax, 4½ ft. high, and 3½ ft. wide.

Lauràceæ.

*La*úrus nóbilis, 3 varieties, 5½ ft. high, and 4 ft. wide; in loam, bog, and sand.

Euphorbiàceæ.

*Bú*xus baleárica, 5½ ft. high, and 2 ft. wide; in loam and silver sand.

Corylàceæ.

*Qu*ércus *S*ùber, 5½ ft. high, and 3 ft. wide; in loam, bog, and sand.

Q. gramúntia, 6 ft. high, and 4 ft. wide; in loam, bog, and sand.

Q. I'lex, 2 varieties, 7 ft. high, and 2½ ft. wide; in loam and road grit.

Oleàceæ.

O'lea europæ'a, 7½ ft. high, and 1½ ft. wide; in loam, bog, and sand.

Chionánthus virginica, 11 ft. high, and 6 ft. wide; in loam, bog, and silver sand.

Taxàceæ.

*Tá*xus baccàta, 7½ ft. high, and 3½ ft. wide; in bog and silver sand.

T. b. hibérnica, 7½ ft. high, and 3½ ft. wide; in loam, bog, and silver sand.

Coníferæ, § *Abiétinæ.*

*Pi*nus *Cémbra*, 6½ ft. high, and 4 ft. wide; in bog and silver sand.

P. ponderòsa, 5½ ft. high, and 3 ft. wide; in bog and silver sand.

*A'*bies Clanbrasil*iàna*, 5 ft. high, and 2½ ft. wide; in bog and silver sand.

*Pí*cea Frà*seri*, 5½ ft. high, and 4½ ft. wide; in loam, bog, and sand.

*Cè*drus Libàni, 2 ft. high, and 3 ft. wide, 20 years old, and shaped like a bee-hive.

Coníferæ, § *Cupréssinæ.*

*Thù*ja plicàta, 6½ ft. high, and 3 ft. wide; in loam and bog.

Taxòdium péndulum, 10 ft. high, and 3 ft. wide; in loam, bog, and sand.

*Ju*níperus chinénsis, 8 ft. high, and 3 ft. wide; in loam, bog, and sand.

J. suécica, 5½ ft. high, and 1½ ft. wide; in loam, bog, and sand.

The spectator, standing at *v*, with his back to the mass, sees the house on two sides to the greatest advantage, as in *fig.* 210.; looking towards *x*, he sees a fine display of plants in pots and vases, backed by a dense wood, of which some idea may be obtained from *fig.* 211.; and, looking towards *u*, he has also a great variety of rich and interesting objects. Among the plants in the lawn, in front of *v*, are, Brugmán*sia* suavèolens, Magnò*lia* conspícua, *A'*bies Douglàs*ii*, Taxòdium dístichum nùtans, and various others, which will be found in a list given below.

w. Here are two baskets of pelargoniums, with elaborately worked handles, and between them a vase, supported on an elegant shaft, as seen in *fig.* 211., and filled with *V*erbèna chamædrifòlia. Between this vase and the walk are, a fine specimen of Magnò*lia* conspícua, and one of Robín*ia* Pseùd-*A*càcia tortuòsa.

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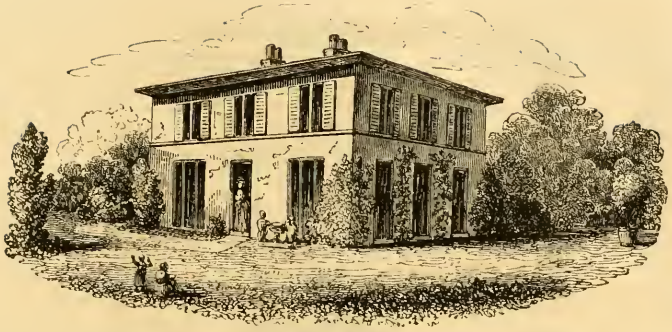

Hendon Rectory.

x, A bay, ornamented with a series of standard fuchsias, with some choice plants, and elegant vases in front of them. Among these plants are, Kálm*ia* latifòlia, *R*hododéndron arbòreum hýbridum, and a standard *R*hododéndron pónticum. A handsome vase is filled with *Petùnia* phœnícea.

The fuchsias and myrtles grown in tubs and pots, and set out on the lawn during summer, are splendid specimens of the following kinds:

Fúchs*ia* grácilis, 8½ ft. high, head 6½ ft. wide; tub 2 ft. wide, and 1 ft. 10 in. high.

Another specimen, 8 ft. 9 in. high, head 6½ ft. in diameter, with a clear stem of 4½ ft., and 6 in. in circumference; grown in a tub 2 ft. wide, and 1 ft. 10 in. high.

Another specimen, total height 10½ ft., with a clear stem of 7 ft., the head 5 ft. in diameter; grown in a tub 1 ft. 9 in. wide, and 1 ft. 4 in. high.

Another specimen, in all respects the same as the last, except that it has a clear stem of 7 ft. 10 in.

Fúchs*ia* cónica, total height 6½ ft., clear stem 5 ft., width of the head 5 ft. 9 in.; grown in a tub 1 ft. 5 in. wide, and 1 ft. 3 in. high.

Fúchs*ia* globòsa màjor, total height 6 ft., clear stem 3½ ft.; grown in a pot 1 ft. wide, and 1 ft. high.

Fúchs*ia* tenélla, grown in a pot 1 ft. 9 in. wide, and of the same height, forms a regular cone 10 ft. 6 in. high, and 5 ft. in diameter at the base.

*My*rtus commùnis flòre plèno, the common double-blossomed myrtle, total height 6½ ft., with a clear stem of 2½ ft., the head 4 ft. in diameter; grown in a tub 2 ft. wide, and 1 ft. 9 in. high.

Two handsome standard common myrtles, 3 ft. 3 in. high; grown in pots 10 in. wide, and 10 in. high.

Two standard double-flowered myrtles, of the same dimensions; grown in pots of the same size.

The more remarkable of the trees and shrubs planted on the lawn are the following:

Ranunculàceæ.

Clématis, several species.

*Magnol*iàceæ.

Magnòl*ia* grandiflòra.
g. lanceolàta.
glaúca.
g. Thompson*iàna*.
umbrélla.
acuminàta.
auriculàta.

M. macrophýlla.
conspícua.
obovàta.

Berberàceæ.

Bérberis fasciculàris.
vulgàris.

*Ternström*iàceæ.

Caméll*ia* víridis.
japónica semidùplex.
j. rùbro plèno.
C. j. álbo plèno.
j. quadrangulàris.
Stuárt*ia* Malachodéndron.

Aceràceæ.

*A*cer créticum, 8 ft. high.

Æsculàceæ.

*Æ*sculus rubicúnda.
cárnea.
pállida.

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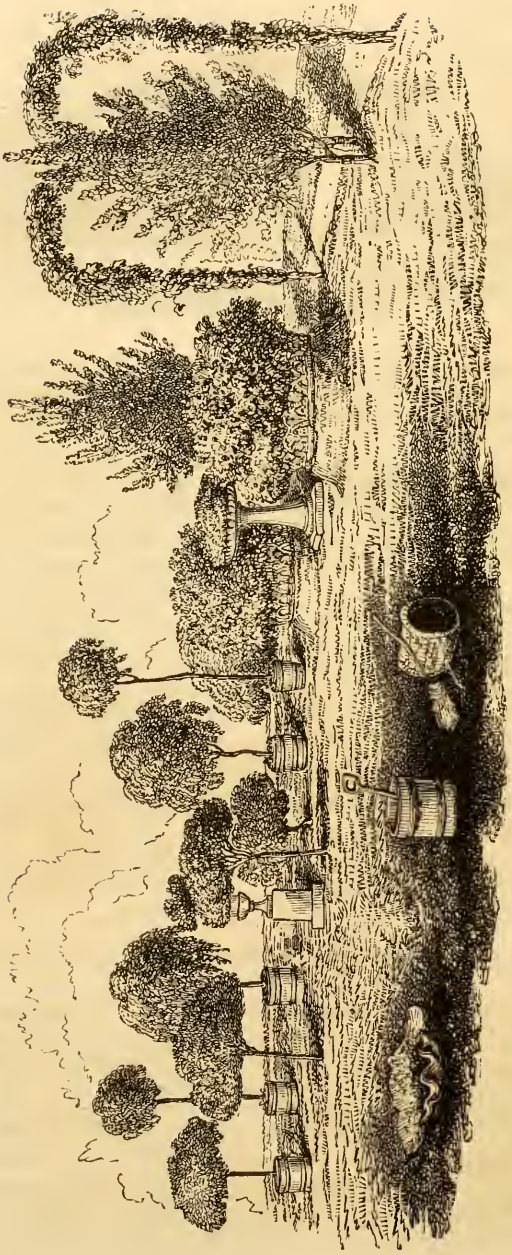

View at Hendon Rectory.

P*a*v*ia* dìscolor and P. fláva, 3 ft. high, and 3 ft. wide; in loam and bog.
P. hùmilis.

Sapindàceæ.

Kölreutèr*ia* paniculàta.

Vitàceæ.

*V*itis vulpìna.

Celastràceæ.

Curtís*ia f*aginea.
*E*uónymus europæ*u*s fòliis variegàtis.

Aquifoliàceæ.

*I*lex *A*quifòlium.
A. heterophýllum.
A. crassifòlium.
A. fèrox.
A. echinàtum.
A. flàvum.
A. senéscens.
A. àtro-marginàtum.
A. álbo-pictum.
A. aúreo-pictum.
A. scóticum.
A. recúrvum.
baleárica.
Peràdo.
opàca.
Dahoón.
Cassìne.
myrtifòlia.
lævigàta.
a beautiful unknown kind.

Rhamnàceæ.

*R*hámnus *A*latérnus.
latifòlius.
baleáricus.
vulgàris.
glàber.
integrifòlius.
aúreus.

Leguminòsæ.

Sophòra japónica péndula, 6½ ft. high, and 5 ft. wide; in loam and bog.
S. japónica, 10 ft. high, and 6 ft. wide; in loam and grit.
*C*ércis canadénsis, 8 ft. high, and 3 ft. wide; in bog.
*G*enísta virgàta.
*P*istàcia *T*erebínthus.
*C*ýtisus *L*abúrnum.
L. variegàtum álbum.
woolgáricus.
*U*lex europæ*u*s flòre plèno.
Edwárds*ia* microphýlla.
grandiflòra.
Gleditsch*ia* hórrida.
Gymnócladus canadénsis.
*A*càcia armàta.
A. Julibrissin.

Rosàceæ.

*C*érasus àvium múltiplex.
Cotoneáster microphýlla.
Photínia serrulàta.
*P*yrus spectábilis.
*C*rat*æ*gus *O*xyacántha.
O. præcox.
O. coccínea.
O. aúrea.
*R*òsa, 100 dwarf standards of the very best sorts.

Calycanthàceæ.

Calycánthus flóridus.

Granatàceæ.

*P*ùnica *G*ranàtum.

Philadelphàceæ.

*P*hiladélphus coronàrius.

Myrtàceæ.

*M*yrtus commùnis.
c. romàna.
c. múltiplex.
Eucalýptus, a beautiful pendulous species, with oval glaucous leaves, growing 2 or 3 feet in one season.

Passifloràceæ.

Passiflòra cærùlea.

Grossulàceæ.

Ribes alpìnum, 3 ft. high, and 4 ft. wide; in dung, loam, and bog.
R. alpìnum var.
R. sanguíneum.

Araliàceæ.

*H*édera arboréscens.
canariénsis.
*H*èlix.
H. álbo variegàta.
H. flàvo variegàta.

Hamamelidàceæ.

*H*amamèlis virgínica.

Loranthàceæ.

*A*úcuba japónica.

Ericàceæ.

*R*hododéndron máximum.
álbum.
purpùreum.
variegàtum fòliis aúreis.
azaleoïdes.
hýbridum.
Smíthii.
arbòreum.
campanulàtum.
catawbiénse.
barbàtum.
dáùricum.
ferrugíneum.
hirsùtum.
caucásicum.
Russell*iànum.*
R., with larger foliage and flowers.
anticulénse (?).
magnoli*æfòlium*; and about 50 scarlet varieties, hybrids, &c.
Azàlea índica.
i. álba.
punícea.
purpùrea.
calendulàcea.
c. chrysolécta.
c. ignéscens.
Andrómeda floribúnda.
arbòrea.
*A*rbutus *U*nedo.
rùbra.
crísp*a*.
canariénsis.
hýbrida.
*A*ndráchne.
procèra.
Pince's hybrid.
*V*accínium nítidum.
*A*rctostáphylos.

Myrsíneæ.

*M*yrsine retùsa.

Oleàceæ.

*P*hillýrea, of sorts.
*O*lea europæ*a*.
*b*uxifòlia.
Syrínga vulgàris.
v. álba.
pérsica.
p. álba.
Chionánthus virgínica.

*F*ráxinus, variegated white-leaved.

F., curled-leaved.

Lauràceæ.

*L*aúrus *Benzòin*, 6 ft. high, and 4 ft. wide; in loam and bog.

Thymelàceæ.

*D*áphne Laurèola.
- póntica.
- collìna.
- neapolitàna.

Aristolochiàceæ.

*A*ristolòchia sìpho.

Euphorbiàceæ.

*B*úxus baleárica.
- sempervìrens arborés-cens.
- s. a. argéntea.
- s. a. aúrea.

Urticàceæ.

*F*ícus Cárica.

Betulàceæ.

A'lnus incìsa.

Corylàceæ, or Cupulíferæ.

*Q*uércus gramúntia.
- *I*'lex.
- *I.* integrifòlia.
- *I.* serràta.
- *I.* oblónga.
- *I. fagifòlia.*
- *I.* crìspa.
- *S*ùber.
- coccífera.
- Túrneri.
- bícolor.
- tinctòria.
- coccínea.
- palústris.
- *Æ*'gilops.
- pedunculàta.
- p. fòliis variegàtis.
- fastigiàta.
- lyràta.
- *C*érris.
- Lucombe*àna.*

*Q*uércus Lucombe*àna* nòva.
- fern-leaved.
- víridis.
- fulhaménsis, or dentàta.

*F*agus sylvática *f*ilicifòlia, the fern-leaved beech.

Balsamìnàceæ.

Liquidámbar Styracíflua.

Taxàceæ.

Podocárpus nucíferus.

Coníferæ.

*P*inus *P*ináster.
- *P*ínea.

A'bies Douglàs*ii*, 10 ft. high, and 6 ft. in diameter; planted in a tub sunk into the ground and coucealed.

*C*èdrus Líbàni, 20 ft. high.

Smilàceæ.

*R*úscus racemòsus.

y, A cedar of Lebanon; and to the right and left are two beds of select dwarf dahlias. Beyond the beds of dahlias are two rustic baskets of pelargoniums; and there is a shell filled with mesembryanthemums. The other plants are select species of pines, firs, and Cupréssinæ.

z, A strip of lawn, bounded on the south by a wire fence, which separates it from a paddock, and varied with beds of dahlias, pelargoniums, and other showy flowers. On the north of this strip of lawn is an oblong pond, well stocked with water lilies and gold fish.

c, Shed for cows or horses.

1, Reserve ground for proving seedling dahlias.

2, House for hurdles for dividing the paddock.

3, Compartment entirely devoted to dahlias, which are planted in beds 3 ft. wide, with alleys 2 ft. wide between. The collection amounted, in the year 1837, to upwards of 400 sorts, which, according to Mr. Lawrence, were among the best then in existence.

4, 4, Kitchen-garden, chiefly planted with gooseberries, currants, raspberries, strawberries, potherbs, asparagus, tart rhubarb, sea-kale, and several articles not so readily procured from the market-gardens in the neighbourhood.

5, Tool-house, including a potting-shed.

6, Border for choice flowers; the wall covered with half-hardy shrubs.

7, 7, Two green-houses entirely devoted to Coniferæ in pots. The following list includes those species which constituted the collection in November, 1837:

Taxàceæ.

Dacrýdium cupréssinum, 6 ft. 9 in. high, and 5 ft. wide; in a pot 17 in. wide, and 18 in. deep: by far the largest and handsomest plant of this species ever seen in England.

Coníferæ, § *Abiétinæ.*

*P*inus sylvéstris.

P. s. rigénsis, 4 ft. high, and 2 ft. wide; in a pot 9 in. wide, and 9 in. deep.

P. pumílio. *P.* p. *Mùghus.*

P. Banks*iàna*, 3½ ft. high, and 2 ft. in diameter; in a pot 10 in. wide, and 10 in. deep.

P. ìnops, 5ft. high, and 3½ ft. wide; in a pot 17 in. wide, and 17 in. deep.

P. mìtis. *P.* púngens.

P. Larício, 4 ft. high, and 18 in. wide; in a pot 10 in. wide, and 10 in. deep.

P. austrìaca, 1 ft. high, and 9 in. wide; in a pot 6 in. wide, and 6 in. deep.

P. Pallas*iàna*, 2 ft. 3 in. high, and 2 ft. in

diameter; in a pot 13 in. wide, and 13 in. deep.

P. resinòsa.

P. Pináster.

P. P. var. helénica, from St. Helena, 7 ft. high, and 4 ft. in diameter, grafted on *Pinus sylvéstris.*

P. P. var. nòva zælándica *Lodd.*, from New Zealand.

P. P. escarèna, 6 ft. high, and 4 ft. wide; in a pot 13 in. wide, and 13 in. deep.

P. Pínea, 3½ ft. high, and 2 ft. in diameter, in a pot 12 in. wide, and 12 in. deep.

P. halepénsis, 4 ft. 3 in. high, and 2 ft. 3 in. in diameter; in a pot 10 in. wide, and 12 in. deep.

P. Tæ'da, 3 ft. high, and 3 ft. wide; in a pot 8 in. wide, and 8 in. deep.

P. rígida, 6 ft. 2 in. high, and 4½ ft. in diameter; in a pot 2 ft. wide, and 2 ft. deep.

P. serótina. *P.* ponderòsa.

P. Sabin*iàna*, 4 ft. high, and 3 ft. wide; in a pot 19 in. wide, and 17 in. deep: and another, 7 ft. high, and 5 ft. wide; in a pot 15 in. wide, and 10 in. deep.

P. Coúlter*i* (macrocárpa *Lindl.*), 4 ft. high, and 3 ft. wide; in a pot 13 in. wide, and 13 in. deep.

P. longifòlia, 5½ ft. high, and 3 ft. wide; in a pot 13 in. wide, and 13 in. deep.

P. Gerard*iàna.*

P. austràlis, 3½ ft. high, and 18 in. in diameter; in a pot 17 in. wide, and 17 in. deep.

P. canariénsis.

P. sinénsis, 3½ ft. high, and 3 ft. in diameter; in a pot 12 in. wide, and 12 in. deep.

P. insígnis, 5½ ft. high, and 2 ft. wide; in a pot 13 in. wide, and 14 in. deep: another is 3 ft. high, and 1½ ft. wide.

P. Teocòte, 13 in. high, and 9 in. wide; in a pot 7 in. wide, and 7 in. deep.

P. leiophýlla.

P. Llave*àna*, 2 ft. high, and 1¼ in. wide, 6 years old.

P. Cémbra, 4 ft. high, and 4 ft. in diameter; in a pot 16 in. wide, and 16 in. deep.

P. Stròbus.

P. excélsa, 1 ft. 7 in. high, and 13 in. in diameter; in a pot 7 in. wide, and 7 in. deep.

P. Lambert*iàna.*

P. montícola, 1 ft. high, and 9 in. in diameter; in a pot 9 in. wide, and 9 in. deep.

A'bies excélsa var., 2½ ft. high, and 1½ ft. wide; in a pot 10 in. wide, and 10 in. deep.

A. e. Clanbrasil*iàna*, 18 in. high, and 2½ ft. wide.

A. e. pygmæ'a, 13 in. high, and 13 in. wide, 20 years old.

A. nìgra, 5 ft. high, and 6 ft. in diameter; in a pot 18 in. wide, and 18 in. deep.

A. rùbra, 6½ ft. high, and 5½ ft. wide.

A. Smith*iàna*, 2 ft. high, and 1½ ft. wide; in a pot 10 in. wide, and 9 in. deep: another, 3½ ft. high, and 3½ ft. wide.

A. Douglàs*ii*, 4 ft. 3 in. high, and 3½ ft. in diameter; in a pot 1 in. wide, and 12 in. deep. The plant on the lawn, which is 10 ft. high, is also in a tub, plunged, and the brim covered.

A. Menziès*ii*, 3 ft. high, and 2½ ft. wide; in a pot 13 in. wide by 13 in. deep.

A. canadénsis.

A. cephalónica, 3 ft. 9 in. high, and 5 ft. wide; in a pot 18 in. wide, and 21 in. deep: two plants of these dimensions, and three others of smaller size.

Pícea pectinàta.

P. balsàmea.

P. b. Fràser*i*, 2 ft. high, and 20 in. wide; in a pot 9 in. wide, and 9 in. deep.

P. Pichta, 1½ ft. high, and 1½ ft. in diameter; in a pot 11 in. wide, and 11 in. deep.

P. Webb*iàna*, 3 ft. high, and 3. ft. wide; in a pot 18 in. wide, and 16 in. deep.

P. grándis, 3 ft. high, and 2 ft. wide; in a pot 12 in. wide, and 13 in. deep.

P. nóbilis, 1½ ft. high, and 2½ ft. wide; in a pot 13 in. wide, and 13 in. deep.

Làrix europæ'a.

L. microcárpa.

Cèdrus Libàni.

C. Deodàra, 3½ ft. high, and 4 ft. wide; in a pot 14 in. wide, and 18 in. deep: another, 5 ft. high, and 4 ft. wide.

Araucària imbricàta, 3½ ft. high, and 3 ft. wide; in a pot 16 in. wide, and 17 in. deep.

A. brasiliàna, 6 ft. high, and 4 ft. in diameter; in a pot 18 in. wide, and 18 in. deep.

A. excélsa, 5½ ft. high, and 3½ ft. wide; in a pot 13 in. wide, and 10 in. deep.

A. Cunninghàm*ii.*

Cunninghàm*ia* sinénsis, 6 ft. high, and 5 ft. wide; in a pot 13 in. wide, and 13 in. deep.

Coniferæ, § *Cupréssineæ.*

Thùja orientàlis.

T. plicàta, 6 ft. high, and 3 ft. wide.

T. articulàta, 7 ft. high, and 2½ feet wide; in a pot 9 in. wide, and 10 in. deep.

Cállitris pyramidàlis, 2 ft. high, and 1 ft. wide; in a pot 7 in. wide, and 6 in. deep.

Cupréssus Tournefórtii, 17 in. high, and 8 in. wide; in a pot 5 in. wide, and 5 in. deep.

C. lusitánica, 3 ft. high, and 2 ft. wide; in a pot 8 in. wide, and 8 in. deep.

Juníperus phœnícea, 4 ft. high, and 18 in. wide; in a pot 8 in. wide, and 8 in. deep.

J. from Gossainthan, 2 ft. high, and 1 ft. wide; in a pot 8 in wide, and 8 in. deep.

J. austràlis, 1 ft. 9 in. high, and 1½ ft. wide; in a pot 6 in. wide, and 6 in. deep.

J. excélsa, 3 ft. high, and 15 in. wide; in a pot 9 in. wide, and 10 in. deep.

J. bermudiàna, 2 ft. 10 in. high, and 15 in. wide; in a pot 9 in. wide, and 9 in. deep.

J. recúrva, 4½ ft. high, and 2½ ft. wide; in a pot 13 in. wide, and 13 in. deep.

8, 8, 8, Hot-beds for striking and bringing forward pelargoniums and other flowers, for the beds, baskets, vases, &c.

9, Potting-shed.

10, Large pits for preserving fuchsias, orange-trees, brugmansias, camellias, and other large plants, in tubs, through the winter.

11, Working-shed, with store-room over, and containing, also, the furnaces for heating the green-houses and the pits.

399. *Remarks.*—The practice adopted by Mr. Williams, of growing in pots pines which will endure the open air (we make an exception in favour of those that will not, such as *P.* longifòlia, *P.* leiophýlla, &c.), and keeping them in a green-house both in summer and winter, cannot be recommended; because, though the plants, when taken so much care of as at Hendon Rectory, will look remarkably well for five or six years, yet, for want of room, they must ultimately become stunted and die; or, if they are turned out into the free soil, after being six or seven years in pots, even with all the care that can be bestowed in unwinding their roots from the balls, and spreading them out, their chance of living is very doubtful. The only plants, in our opinion, that can be legitimately grown in green-houses and hot-houses, are such as can be brought to as great a degree of perfection there, as they would attain in the open air in their native countries. Of these there are thousands of species which can be brought to greater perfection under glass in Britain, than they are ever seen to attain in their native countries, in the open air. This will apply to almost all the shrubs, and all the herbaceous plants, of warm climates. The trees of warm climates have, in general, a miserable appearance under glass, for want of room.

Subsect. V. *The Culture and Management of Large Country Villas.*

400. *The culture of the gardens* of large country villas only differs from that of smaller ones in being on a larger scale; and neither possess any features to distinguish them from the general culture of gardens, the details of which will be given briefly in the after part of this work. The green-house plants used for bedding out must be raised from cuttings, and kept through the winter; and the kitchen garden and orchard must contain a sufficient quantity of vegetables and fruit to supply the wants of the family.

401. *The management of the pleasure-grounds and shrubbery* differs, however, when a horse or cow is kept, in requiring more care. Both cows and horses are very fond of tearing branches off trees when they can reach them; and hence, nothing is more common in fields where horses or cows have grazed, than to see what is called the browsing line; that is, all the trees look as though their lower branches had been sheared or cut off, at exactly the same distance from the ground. Nothing can have a more harsh and disagreeable

appearance than this line, and yet it is very difficult to prevent it; the only way, indeed, is to surround the trees with guards (see p. 264. to p. 267.); but even these are not always efficacious, and they are not at all ornamental. Many persons, to avoid this unpleasant appearance, plant no trees in the paddock where the horse or cow is to graze, and separate it from the shrubbery by an iron fence. Others do not suffer their cows to graze at all, but keep them constantly in the cow-house, and feed them with cut grass, grains, and hay.

402. *The management of cows*, when kept in the field, is very simple; as they require scarcely any other care than milking at regular times, and taking care that they have an abundant supply of water. Cows are very particular in having clean water; and where there is a pond, they generally go into the deepest part before they attempt to drink. They like to chew the cud in the shade; and if there are no trees in the paddock where they graze, they should have an open shed to afford them shelter during the hottest part of the day. A cow is seldom healthy if she is kept always in the same field, as she is very delicate in her appetite, and does not like grass that has been trodden down or lain upon, till it has quite recovered itself. She also requires long grass, as she twists the grass round her tongue before she bites it, instead of nibbling it like sheep and horses. The cow dung should also be spread with a fork; as, unless this is done, strong, common grass will spring up from every place where a patch of cow dung has lain, and this grass no cow will eat. Cows kept in a field, should not be put in a cow-house at night; as they are very apt to take cold if kept in a warm cow-house all night, and turned out about sun-rise. They are peculiarly sensible to all changes of temperature, especially from heat to cold. They also give less milk when kept in the cow-house all night, and turned out in the morning; as they will seldom eat dry food when they have been used to grass. It is also a well-known fact that grass about sun-rise, when the dew is just evaporating, is very unwholesome for cows, and very apt to make them what is called *hoven*, or *blown*. Before sun-rise, while the dew is on the grass, it is not unwholesome; and hence cows which sleep in the field are always found by the dairy-maid, when she goes to milk them at sun-rise, to have finished their morning meal, and to be standing, chewing the cud. When, on the contrary, they are turned out at sun-rise, they are too hungry to wait, and they begin to eat the grass immediately.

403. *Management of cows kept constantly in a cow-house.*—Unnatural as it may seem, it does not appear that constant confinement has any bad effect upon the health of the cow, or occasions any diminution of her milk. We have already mentioned (§ 354. in p. 259.) that in some of the large London dairies cows have been kept for two years in the same stall without being once untied; and in some country places the same plan is adopted, partly from motives of economy, and partly to prevent any injury being done to the shrubberies. That this plan is most economical, is evident from the fact, that three acres of grass land is generally allowed to each cow, by persons calculating how much stock a farm will maintain; while one acre is sufficient for a stall-fed cow, if only one-half be kept in pasture, and the other sown with beans and carrots. The cow should be fed four times a day, in summer alternately with grass and lucern, and in winter alternately with hay and carrots. The grass should be given fresh; but the lucern should be allowed

to remain twelve hours after it is cut before it is given to the cow, as, if given fresh, the milk will not only have an unpleasant flavour, but the cow is liable to become *hoven*, or *blown*. Where economy is not a paramount object, it is best to feed the cow entirely on grass during the summer. The carrots for winter consumption should be cut like turnips; and the hay should be chopped by a straw-cutting machine, if practicable.

404. *When a cow is milked*, care should be taken to drain every drop of milk from her udder, as if some is left every day, the cow will gradually become dry. Cows are generally milked at intervals of twelve hours; that is, about five in the morning, and about five in the afternoon; but, as they always produce least milk during the twelve hours of night, in some places they are milked three times a day; that is, at sun-rise, at three in the afternoon, and at seven in the evening.

Subsect. VI.—*Renovation of Large Country Villas.*

405. *Renovating the gardens of large country villas.*—Nothing can be added on this head to what has been already said respecting the gardens of small country villas; except what relates to the plant-houses, which will form a separate division of this work.

406. *Renovating the grass land of large country villas.*—It very frequently happens, in neglected residences, where there is only pasture sufficient to keep one or two cows, that the grass has become deteriorated in quality, in consequence of its being mixed with many of the grosser weeds, such as docks, thistles, crowfoot, &c.; and with the coarser grasses, such as carexes, cock's-foot, *Avèna* elàtior, &c. A pasture in this state will not be productive of one-half, or even one-third, of the quantity of milk and butter which it ought to yield; and, though we have no doubt the fact will be doubted by many, yet we can assert, from our own knowledge, that this is the case with the pastures of one-half the villa residences in the neighbourhood of London. The reason is, that persons who have not an intimate knowledge of country affairs are not aware that there are different qualities of grasses, and think that one green field, which can be mown for hay, is just as good as another. They are not aware that grasses may, and indeed should, be cultivated like any other plant; and that there are many kinds of grasses, even in our best pasture fields, which can only be considered as weeds, and which ought to be eradicated. The kinds of these weed-like grasses are different in different soils, and their number increases in proportion as the soil is neglected. Every grass field contains several different species of grass, some of which are deserving of culture, and others are mere weeds; and, in proportion as the field is kept in "good heart" and properly managed, or neglected and impoverished, will the one kind or the other acquire the ascendency. To the superficial observer, however, all grass-fields are alike; and, hence, the same routine, as far as respects management, is applied, whatever may be the nature of the soil, and whether the prevailing grasses be wholesome or injurious. The field is shut up in April, in order to produce a crop of hay; and when this is removed in July or August, the cows are turned in every day, except in the most severe weather, till the return of the shutting-up season. Not to speak of the neglect of draining and manuring, a positive evil resulting from turning the cows out on a clayey undrained soil during winter is, that the ground gets poached, in consequence of which weeds and bad grasses, such as thistles, docks,

crowfoot, carexes, oat-grass, brome-grass, &c., make their appearance; and, by degrees, choke the clovers and good grasses, such as white clover, rye-grass, fescue, &c. Among the weeds, one of the most abundant is the common meadow crowfoot, or yellow buttercup (*Ranúnculus àcris L.*), remarkable for its acrid juice, which, it is alleged, blisters the mouths and stomachs of cows, and injures the quality of their milk and butter. To say nothing of its injurious effects, the proportionate space which this weed occupies in green herbage or in hay is a sufficient reason for wishing to get rid of it; though, from its abundance, not only in bad soils, but in good soils which have been neglected or mismanaged, this is a work requiring some time, and depending on some knowledge of the nature of plants. The crowfoot, as the name *Ranúnculus* (from *rana*, a frog, alluding to the moist places where most of the species grow) implies, naturally loves moist soil, which rye-grass and the other good grasses as naturally dislike. Hence, the first process to get rid of the crowfoot is thorough under-draining by shallow drains, which need not be, in general, more than 1 ft. 6 in. deep, and placed not farther apart than from 8 ft. to 15 ft. The next thing is to apply manure liberally; and the third (without which success would not be complete) is, to pasture the surface at least till the beginning of July, with sheep, if not with cows or horses, before shutting it up to be mown for hay. When the pasture is shut up for mowing, in April or the beginning of May, the leaves and flower-stems of the crowfoot shoot up uninjured along with the grass; and thus the roots of the crowfoot are nourished and invigorated for the following season: but, on the other hand, when the surface is pastured till the beginning of July, the leaves and flower-stems of the crowfoot are cropped by the pasturing animals; the root is weakened in consequence of not deriving as much nourishment from the leaves as it otherwise would do; and, as the crowfoot is one of those plants that scarcely produce any leaves after midsummer, it is in a great measure suffocated by the growth of the grasses in August and September. If this course be pursued for three years in succession with a field overrun with crowfoot (draining and manuring having been properly attended to the first season), the number of these weeds will be found to have greatly diminished, and the clover and good grasses to have increased. To increase the number of the latter plants, some white clover and rye-grass seeds may be scattered over the surface the first year, early in spring. It may be thought that the eating down of the herbage in the beginning of summer, instead of shutting it up for mowing, while it destroys the crowfoot, would also have a tendency to destroy the clover. This will, no doubt, be the case to a certain extent; but the clover has the advantage of being a much more vivacious plant, it having creeping stems, which throw up numerous leaves, and continue growing the whole summer. The meadow crowfoot, on the other hand, is a stationary plant, which increases but slowly except by seed, which throws up only one set of leaves in spring, and which does not renew these in the course of the season. Even the creeping crowfoot, which, however, is more commonly found in arable fields than in meadows, throws up but few leaves when compared with the clover; and is much more easily choked or killed by cropping these leaves early in the season.

407. *Destroying docks and thistles.*—The same practice as that recommended for getting rid of the crowfoot will apply in the case of all broad-leaved weeds; but, as docks and thistles are not so readily eaten by cattle, they may

be either rooted up, or, what is a much more simple and economical mode, and yet quite as effectual, the incipient leaves may be kept constantly cut over close by the surface of the ground as soon as they appear. As the health, and even life, of the root of a plant depend upon the nourishment which it receives from the leaves, so, by removing the incipient leaves or buds from any plant the moment they appear, and continually doing this as long as any leaves or buds are produced, all plants whatever, and consequently all weeds, will ultimately be killed. In this way ferns, which are so injurious to pastures in some sandy soils, may with more certainty be destroyed than by any other mode; for their roots, or rather underground shoots, are so numerous and brittle, that it is scarcely possible to eradicate them by digging them out. It is a common practice to mow weeds and ferns for the purpose of destroying them; but, as this mowing never takes place till the leaves have expanded, a considerable portion of nourishment has been already sent down to the root, and thus the object of the operation is in a great measure defeated. Our readers, therefore, will bear in mind, as a general principle, that all plants, from the loftiest tree to the humblest herb, depend not only for their growth, but for their continued existence, on the leaves which they produce; and that, as we before observed, by removing these leaves before they are fully expanded, all plants whatever, and consequently all weeds, may be destroyed.

408. *Mosses* frequently abound in pastures, and occupy a great part of the space that ought to contain plants of grass or clover. Where pastures are open and fully exposed to the influence of the sun and air, the appearance of moss in them is a symptom of extreme poverty in the soil; as in the case of lawns in the fronts of mansions, which have been mown for many years together without being pastured or manured. When moss is abundant in pastures which have been fed or mown, it indicates moisture, shade, and want of air and sunshine, accompanied, most generally, by want of manure. The remedy in this last case is sufficiently obvious: some of the trees must be removed, or the hedges cut in and kept low, while the soil is sufficiently drained, and manured and pastured one or two seasons, without being mown. The reason why we recommend pasturing without mowing, is founded on the fact that all other plants are more injured by being deprived of their leaves than grasses; consequently, pasturing a surface, by eating down all the leaves close to the ground, must be more injurious to all other plants, whether weeds or clovers, than it is to the grasses, and must have a tendency to give the latter an advantage over the former. Sorrel is very abundant in some soils, and is almost always indicative of an excess of ferruginous earths. The remedy in these cases is the application of quicklime, which neutralises the ferruginous matter. The lime may be given as a top-dressing on the surface of the pasture; but it is most effective when applied after the soil has been broken up, and kept under corn crops a year or two, and then the lime applied when the soil is in a dry and powdery state like itself. Ant-hills are also very common in some pastures. They may be destroyed by breaking open the hills, and scattering them abroad, repeating the operation whenever the hills begin to reappear; because the principle on which success depends is, the interruption of the insect's labours in hatching its young, and in laying up its food for the winter. If the interruption be continued, the ants will in a short time be dispersed and die. The naked spaces from which the nests have been pared off should be sown down with grass and clover seeds. Ants seldom appear

except in worn-out grass lands; and the most effective mode of getting rid of them in this case, at least on a large scale, is, to break up the land, and to keep it three or four years under the plough, before it is laid down again. We can hardly recommend this practice, however, in the case of a paddock of a few acres; because, among other reasons, the loss of two or three years' pasture would be a very serious drawback to the comforts of the family. For so small an extent, therefore, we recommend draining, frequent top-dressings with manure or compost; and scattering in the seeds of rye-grass, fescue, and white clover, wherever the grass appears thin. This ought to be done early in the spring; or in September, after a crop of hay is taken; and the ground ought afterwards to be thoroughly harrowed and rolled.

409. *In order that the draining of permanent pasture* may not appear a more formidable business than it really is, we shall here describe some of the cheapest and best modes of performing it, premising that the object is not to drain the subsoil of water arising from springs, but to collect what rain-water would otherwise stagnate on the surface, or soak into the ground, and be retained there longer than is beneficial for the health of the plants, or to such an extent as to render the soil unfit for the tread of heavy animals. The first thing to determine is the direction of the drains; the next thing, their distance from one another; and the third, their form and the materials with which they are to be filled. If the surface of the land has been formed into ridges before it was laid down in grass, it will, in general, be found sufficient to make one drain in the bottom of each furrow; because we may fairly presume that the ridges were laid out in the direction best adapted for carrying off the water, and that they were formed of such a width as to leave their furrows sufficiently near one another for that purpose. If the land should not have been laid out in ridges, and the surface should be nearly level, then, after having discovered the lowest side of the field (because there is no such thing in nature as a perfectly level field), drains ought to be made at 10 ft. or 15 ft. apart, and parallel to each other, from the highest side of the field to the lowest. If the field be very steep, however, then the drains ought to be made more or less obliquely across the declivity, so as to intercept the surface water, and, at the same time, not to carry it off with such a degree of rapidity as to wear out the bottom of the drains. Where the surface slopes in various directions, and consists of a series of eminences and hollows, then drains must be conducted in such a manner round the eminences as to intercept the water everywhere, especially near the bottoms of the declivities, and to carry it off to the boundary of the field, or to some general outlet or public drain. In strong clayey soils, having a moderate declivity, the distance of 15 ft. between the drains may be sufficient; in loamy soils, it may be more; and where the soil is a strong clay, and the surface quite flat, it ought to be less. Under the last circumstances, we should not hesitate to recommend putting in drains every 6 ft. or 8 ft., and filling up these drains to within an inch of the surface with gravel, if it could be obtained, or with small stones (in the manner we have already described in p. 163.), or with turf and soil.

410. *With respect to the dimensions of the drains*, as the surface is not to be ploughed, they need not be deep; and any greater width than may be required for attaining the depth fixed on is unnecessary. In general, from 15 in. to 18 in. in depth, and from 8 in. to 10 in. in width at the surface, and

from 3 in. to 4 in. in width at the bottom, will be sufficient; except in particular parts of the field, where the drain may have to cross a slight rise in the surface, and where it should be deeper in order to maintain a sufficient slope at the bottom to give currency to the water. The drain, being dug out, may be filled two-thirds of its depth with small stones, brickbats, or very coarse gravel; or with thorn branches, straw ropes, exhausted tanner's bark, carpenter's shavings, or any refuse vegetable matter that will partially or wholly rot, and leave a vacuity for the passage of water. In Essex, the material most commonly employed is straw twisted into a rope 3 or 4 inches in diameter. Reeds tied in cylindrical bundles of a few inches in diameter, are also employed in the same county, as willows are in Huntingdonshire, furze in Warwickshire, broom in Nottinghamshire, the spray of the larch in Wales, and heath in the north of Scotland. The most convenient materials in clayey districts, which are never productive of either gravel or rock, are the branches procured by cutting down thorn hedges. These branches, including the spray, may be laid lengthwise in the drain, and firmly trodden in; covered with soil, and again firmly trodden in; and, finally, the surface turf replaced. In order to make allowance for the sinking of the materials of the drain, this surface turf should be kept two or three inches higher than the adjoining surface, its edges being beaten down so as to form a small semicircular ridge in the direction of the drain. In the digging out of these drains, two kinds of spade are used: the first (*fig.* 212. *c*), 8 in. broad at the tread, is for taking out the surface-spit; and the second (*b*), which is 5 in. wide at the tread, for digging out the remainder. Afterwards a sort of hoe, or scoop, is used (*fig.* 212. *a*), for clearing out the loose particles and small lumps of soil from the bottom of the drain.

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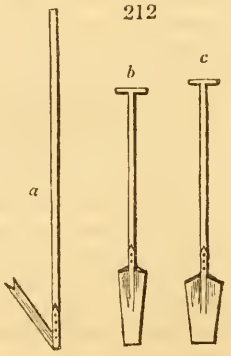

A simple and not an expensive mode of forming drains in strong clayey pastures, is to take off the surface-spit 9 or 10 inches in width; and, a gutter having been formed in the subsoil, 18 or 20 inches in depth, the surface-spit is replaced. This mode of draining is most effective where the surface is naturally tolerably even; but, where inequalities are to be passed over, the gutter beneath requires to be cut down to such a depth, that its sides are apt to crumble in.

There are several kinds of draining ploughs, and one, the mole plough, forms a cylindrical furrow drain; but none of these machines can be recommended for using in a villa paddock; and, indeed, from their original cost, and the great power required to draw them, it is very doubtful to us whether they pay anywhere.

411. *Wherever it is determined to break up old pasture land,* on a wet or retentive soil, a different kind of underground drain is required to what was sufficient when it was under pasture. Though not quite so numerous as in grass lands, yet these drains require to be much deeper, and are consequently more expensive; nor will they altogether supersede the use of frequent shallow drains, after the ground is laid down again for permanent pasture.

412. *Remarks.*—We have dwelt longer on the subject of renovating the paddock than those will think necessary who are not aware how much the difference of produce depends on management. Our wish is to see the paddock in as high order and keeping, in its way, as any part of the pleasure-ground or the kitchen-garden; and, well knowing how much of the comfort of a villa residence depends on the abundance and excellence of the milk and butter it produces, we feel that we can scarcely sufficiently impress our readers with the importance of bringing their grass fields into the highest state of cultivation, and afterwards keeping them in the highest order.

413. *In renovating the kitchen-garden*, the reader should bear in mind the importance of not having the roots of the trees too deep in the soil, and that, should this be the case, he must either take up and replant, or renew; unless, which is very rarely the case, he can reduce the surface of the garden so as to leave all the main roots of the trees at a proper distance beneath it. The soil of the kitchen-garden may, as before observed, be restored by rest, without any crop whatever; by the substitution of a lage portion of fresh soil; or by the application of animal manure, such as good stable dung or night soil.

CHAPTER III.

COUNTRY MANSIONS.

414. *Country mansions* differ from country villas, even of the largest size, in having a park and a farm attached, and in their size, as the extent of such a residence can scarcely be less than from fifty to a hundred acres. There are also many adjuncts, without which a country mansion cannot be considered complete, which would be quite out of place in a country residence of smaller size. We shall here say a few words on some of these points, and on some others which are of more consequence in a large place than in a small one, beginning with the latter; after which we shall give two or three designs for residences of this kind.

SECTION I.

GENERAL OBSERVATIONS ON COUNTRY MANSIONS.

415. *Among the points* which are of more consequence in a large country residence than in a small one may be mentioned, the situation of the domestic and stable offices; the farm and farm buildings; the fish-ponds; the ice-house; the scenery of the park; the entrance-lodge, &c.

416. *A bath-room*, for the use of the gentlemen of the family, may be on the ground-floor, either attached to the house or not, as may be most convenient. The advantage of having the bath-room on the ground-floor is, that hot water may be more conveniently supplied to the bath from the cistern at the back of the kitchen fire-place, or heated by the same fire as a hot-house or green-house, as may be most suitable. *Fig.* 213. shows a bath-room placed behind a conservatory, the bath being heated by the same fire, but not from the same boiler. In this plan, *a* is the dining-room; *b* the drawing-room, from

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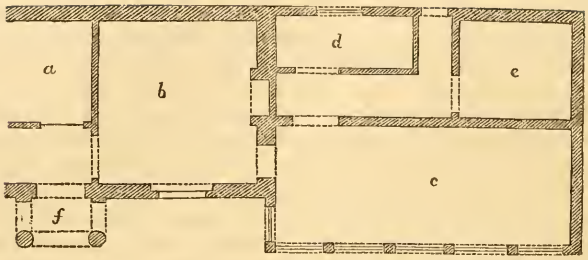

which there is a glass door into the conservatory (*c*); and *d* is the bath-room, between which and the conservatory there is a passage connecting it with the boiler-room (*e*). The entrance porch of the dwelling-house is shown at *f*. The boiler is placed in the room *e*, on a level with the bath as it stands in the bath-room; and the bath is heated by a coil of pipes at one end. The water of the bath might have been heated in a simpler and less expensive manner by causing it to circulate directly through the boiler; but, as the water in a boiler which is in constant use for heating a conservatory, or other building or apartment, generally contains a good deal of sediment, it is not fit for using as a bath.

417. *The size of the bath-room* need not be large, because it is not understood to contain a swimming-bath, but only one for immersion. For this purpose, as the bath need not be larger than 8 ft. in length and 3 ft. in breadth, a room 8 ft. by 10 ft. in the clear might suffice, the bath being along the narrowest end, the fire-place on one side, a window on that opposite, and a door on the side opposite the bath. A room 10 ft. or 12 ft. square, however, will be more convenient; and if it is to contain a vapour-bath and a shower-bath, as well as a common water-bath, it should be somewhat larger. The height of the room, if it is to contain a shower-bath, should not be less than 10 ft.; but, for a common bath or vapour-bath, 7 ft. or 8 ft. will be sufficient; and in this case the bath-room may be placed as a mezzanine, or half-floor room, like the *entresol* of the French. Adjoining the bath-room, and as an anteroom to it, there should be a dressing-room with a fire-place, and this fire-place may be so arranged as to heat the water in the bath-room. There should be a bell in the dressing-room, communicating with a bell-pull, suspended from the wall on one side of the bath, near the head; it may also be convenient to have a bell appropriate to the bath-room hung along with the other house bells, because it sometimes happens that invalids are seized with cramp while in the bath, and find it necessary to ring for assistance.

418. *The bath, or vessel for containing the water*, is generally half or a quarter sunk in the floor; or, if the floor does not admit of this, there is a step raised to half the height of the bath in front, in order to facilitate getting in and out. The dimensions of the bath are from 6 ft. to 8 ft. in length, from 1 ft. 8 in. to 3 ft. in breadth, and from 1 ft. 6 in. to 2 ft. 6 in. in depth. It is commonly formed of inch boards, lined with copper or sheet-lead, and painted in imitation of white marble; but sometimes, when the bath is on the ground-floor, the sides are formed of brickwork, and lined with glazed tiles. Sometimes, also, they are formed of polished stone or marble, or slabs of

slate. The sides of the bath are generally made perpendicular, or nearly so, or somewhat wider at top than at the bottom : the end for the head generally slopes at an angle of from 45° to 50°, but the foot is commonly perpendicular, slightly sloped, like the sides. One pipe from the boiler or other source of hot water, and another from the cistern or other source of cold water, are introduced at the back of the bath, but so as not to project into it, the cocks being placed against the wall, with their nozzles turned outwards, so as barely to come over one of the sides of the bath. A plate should be fixed in the wall beside each cock, the one inscribed with the word "hot," and the other with the word "cold;" and the distance of the cocks from the head of the bath should be such, as to allow a person while seated in the water to reach them without inconvenience. In the bottom of the bath, at the foot end, there must be a waste-pipe for emptying the bath, which may either be stopped with a plug, having a grating beneath to prevent the escape of any matters which would choke up the pipe; or the waste-pipe may terminate under a grating or plate pierced with holes in the floor of the bath, near which there may be a stop-cock, concealed by a small trap-door, by turning which the water may be let off at pleasure; or, what is preferable, if the situation admits of it, the opening of the stop-cock may be in the floor of the room at the foot of the bath.

419. *The simplest form of a vapour-bath* is to have an open boiler with a fire beneath, and over the boiler a grated platform, on which a chair is placed for the bather to sit upon, while a large cloth or sheet is thrown round him in such a manner as to inclose the whole of the grated platform, and every part of his body except his head. The water being kept in a boiling state, the steam ascends under the cloth, raising the temperature of the bather to a high degree. If thought advisable, herbs may be thrown into the boiler, which will communicate their odour to the vapour.

420. *A shower-bath* is always of cold water; and, as it produces no steam, when of the common portable kind, it may be used in any room that is most convenient. When fixed, there may be a supply-pipe, with a stop-cock above it, from some adequate source. When this is the case, the shower-cistern may be placed over the middle of the common bath, and the discharge-pull may hang down close by the wall.

421. *Situation of the offices.*—In country houses built twenty or thirty years ago, and subjected to various repairs and additions, nothing is more common than to find the offices placed at the wrong end of the house, or perhaps partly at one end, and partly at the other. There is a positive loss of the labour of the domestics in this arrangement; nor can they, when this is the case, be considered as under the full command of the master and mistress, because they cannot be expected to hear the bells, when the offices are divided, unless there were two sets, one on each side; while there is a constant passing and repassing of the entrance front, or probably of the lawn front, by persons having business in the kitchen or stable-court. The seclusion of the lawn front, in cases of this kind, is totally destroyed; and neither the living-rooms of the house, nor the walks in the pleasure-grounds, can be said to possess that complete privacy which is generally considered to be one of the greatest luxuries of a residence in the country. An example of this kind of house was noted by us, some years ago, in the neighbourhood of Chertsey, at Lyme Grove; and, as we were on a visit for upwards of a fortnight to the family

who at that time occupied it, we had ample opportunity of studying its inconveniences. The house is beautifully situated in the midst of grounds much diversified by nature, not badly planted, and extending so far on every side, that the boundary is nowhere seen; but the house, though it contains some spacious rooms, has great faults: the store-room and bath-room (*a*, *b*, *fig.* 214.)

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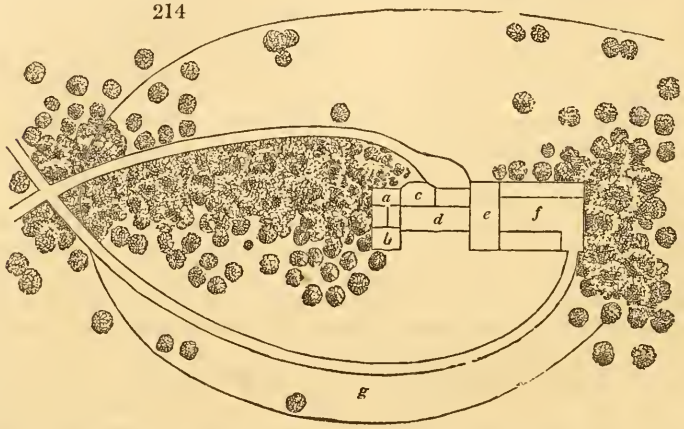

can only be entered through the dining-room (*c*) or drawing-room (*d*); while the offices (*e*), by being at the wrong end, occasion the road to the kitchen-court (*f*) to pass across the lawn before the garden front (*g*). Had the general arrangement been reversed, as shown in *fig.* 215., and the bath-room and store-room been put on the side next the offices, the latter might have been

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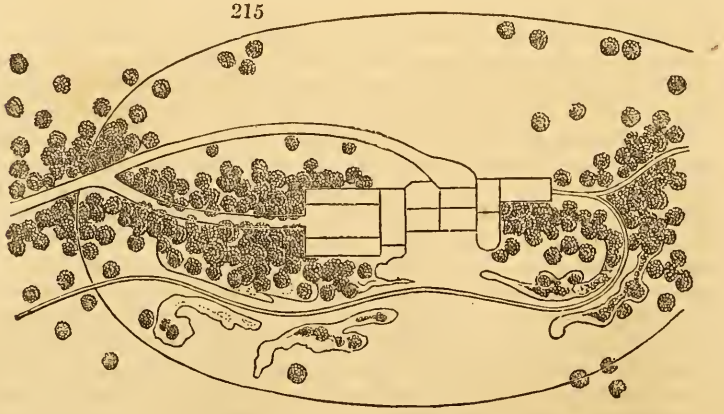

conveniently entered without coming within sight of the house; and the privacy of the lawn front would thus have been complete. Among the petty evils of a mal-arrangement of this kind are, the number of gates, and the extent of fencing which it requires; and, though these make little appearance

in the description of a place, or in its plan on paper, yet, in its actual working (so to speak) by the occupier, they are important items. The difference between a bad arrangement of fences and walks, and a good one, may occasion the opening of a gate or gates fifty times a day, instead of five times; increasing the risk of admitting cattle, pigs, or poultry, where they ought not to be admitted, in a corresponding ratio.

422. *The kitchen offices when detached from the house.*—In designing these, it is of more importance to bear in mind general principles, than to adhere to particular forms and dimensions. Security from vermin is an essential requisite in the construction of the floor and walls of every part of a house, and more particularly of those parts where provisions are kept. The power of thorough ventilation of the atmosphere of every apartment, even of the cellars, when requisite, is another desideratum. Light is more or less essential to every office, except the cellars for wines and liquors; and it is in an eminent degree required for the kitchen, and all those places where food is prepared for the table. A larder, if thoroughly ventilated, may preserve meat without much light; but a pantry requires abundance of light, to insure cleanliness. Light, in the case of meat kept in safes, or in other situations, is unfavourable for the preservation of the meat, as it collects together flies, which are never found in an active state in the dark; and in such cases it ought to be under command; but, in general, it is much more desirable to have light in excess, than to have a deficiency of it. A command of the temperature is a desideratum in the offices of every dwelling, no less than in the living-rooms. Among the first requisites to this are, that of having all the walls, floors, and ceilings made of non-conducting materials; and that of having the ground on which the building stands rendered thoroughly dry by underground drainage, and by a vacuity all round the outside of the foundation walls.

423. *The stable offices.*—In designing these, a recurrence to first principles is of equal importance as in arranging the kitchen offices. The ground on which a stable or coach-house is built ought to be dry, either naturally or by drainage; and the walls ought to be of sufficient thickness to exclude the extremes of heat in summer, and of cold in winter. There ought to be abundance of light admitted, as well for cheerfulness as for cleanliness; and, independently of the doors and windows, there ought to be suitable openings for ventilation. In the stable there ought to be a wooden tube, at least 6 in. square, placed over every stall, and reaching from the under surface of the ceiling to the ridge of the roof, with a cap on the outside to exclude rain; and a slide in the ceiling, at the lower end of the tube, to regulate the quantity of air admitted, so as to keep the atmosphere of the stable at about 50° in winter, and from 60° to 65° in summer. This flue will do for the stable of the horse, what the chimney-flue does for the dwelling-room of the human being. To give a palpable idea of this mode of ven-

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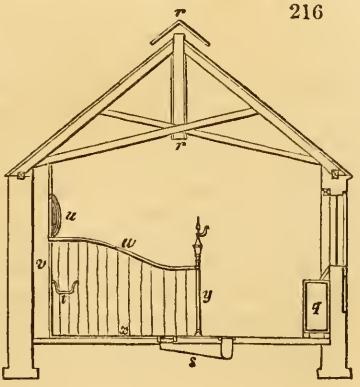

tilating, we may refer to *fig.* 216.; in which the ventilating tube, with its protecting cover, is shown at *r r*: *q* is a corn-bin, placed under one of the windows; *s* is the drain under the floor of each stall, which leads to a main drain under the gutter behind the horses; these drains having grated openings, each with a bell-trap, to prevent the ascent of bad smells; *t* is the cast-iron manger; *u*, the bull's eye cast-iron rack, the hay to which is let down from the loft above, through the open space behind. The mode of keeping hay in lofts over the horses, and letting it down through a space over the racks, which is continually open, is very properly objected to, as contaminating the hay by the breath of the horse; but, when there is a raised ceiling with a ventilator, as in the section before us, the breath of the horse rises to the ventilator, and does the hay no injury whatever. At the bottom of the rack there is, in the space behind, a grated floor, which retains the hay, while it allows the dust and seeds to drop down into the space (*v*), whence they can be taken out at convenience, by an opening under each stall. There is a cast-iron ramped cap (*w*) to the boarded partition between the stalls; and a cast-iron sill (*x*); both cap and sill having grooves for receiving the ends of the boards which form the partition. The partition-post (*y*) is also of cast-iron. That part of the floor of the stable on which a horse stands should always be made perfectly level, with a grating and bell-trap under it, in the centre, for drainage. In general, the floor of the stalls should never be covered with litter in the daytime, or when the horse is not expected to lie down; because the litter retains moisture, harbours insects, and produces an unequal surface for the horse to stand on. Stables, as they are commonly kept, contain an atmosphere charged with ammoniacal gas from the urine, and carbonic acid gas from the lungs, of the horse, which, with moisture from the floor, and other aëriform matters, are extremely disagreeable to man; but, if the stables were properly constructed, ventilated, and drained, kept free from litter during the day, and amply lighted, in the manner we have recommended, they would be as wholesome for a human being to enter, and to remain in, as the living-rooms of a dwelling-house. For various modes of constructing stables, and all their details on the best principles, we must refer the reader to our *Encyclopædia of Cottage, Farm, and Villa Architecture*, p. 373 to p. 383.

424. *The coach-house* should not only be dry, and well ventilated, from its situation and construction, but there should be a fireplace in it, or, rather, a flue for a stove; because it must be recollected, that a coach is composed of wood, iron, cloth, stuffing, &c., and is as liable to be injured by changes in the temperature, or by moisture, as chairs, tables, sofas, beds, or any other articles of furniture in the dwelling-house. Nobody would think for a moment of sitting or lying on a sofa which had been standing for some time in a damp out-house without fire; and yet, if there be any difference between the quantity of damp likely to be imbibed by a sofa and a coach, it would undoubtedly be greater in the latter. The lining, stuffing of the back, and cushions, all act as sponges, and become charged with moisture; which, when the coach is used, is drawn forth by the animal warmth of the persons it contains. Hence, the unknown cause of colds, inflammations of the lungs, and many other diseases, with which those who keep close carriages are often attacked.

425. *The harness-room* should have the walls battened and plastered inside,

and lined with boards in those parts where the harness is to be hung, and should have a fireplace or stove, with ample means of ventilation and lighting; as damp is destructive to harness.

426. *The groom's or coachman's room* is very properly placed over, or adjoining to, the stable for the horses; because the latter are liable to various kinds of accidents in the night-time. There should be a stove (one of Arnott's, for example) in the stable sleeping-room, for use during the most severe weather of winter; because such rooms are, in general, close under the roof, and liable to be very cold; but, by a little arrangement, it might be so contrived that the flue from the fireplace of the harness-room might give all the heat to the coachman's bed-room that was requisite; and, indeed, when the harness-room is placed, as it ought to be, between the stable and the coach-house, with doors communicating with each, all that is necessary is to place the coachman's room over it. By opening the door of this room, which must necessarily be placed near the stoves, the heated air of the harness-room may be admitted to ascend to it at pleasure.

427. *The farm.*—Every one is aware that farming by a proprietor or an amateur is, for the most part, attended by loss in a pecuniary point of view, and that money would be saved by letting the lands to a professional farmer, and purchasing corn, straw, and such other farm produce as might be required for the carriage and saddle-horses of the proprietor. Farming, however, is a great source of recreation and interest to a resident in the country; and without some knowledge of the practices of the art in the district where a country gentleman resides, it will be difficult for him to keep up a proper degree of social intercourse with his neighbours. Farming and the weather, are topics which every countryman can discuss, from the humblest labourer to the most wealthy proprietor. If there are any exceptions, such persons must be out of the pale of general country society. Since, then, every person living in the country must, of necessity, take some interest in farming, it would seem worth while for those who can afford to do so, and have an opportunity, to increase that interest by farming themselves. If we inquire into the habits of our greatest landed proprietors, while they reside in the country, we shall find that a considerable portion of the time of each individual is devoted to the inspection of his farm, and to giving directions to his bailiff, hearing a relation of his market transactions, and auditing his accounts. When a landed proprietor has left his country residence to reside in town, or is gone on a visit to some distant part of the country or abroad, the weekly receipt of his bailiff's journal (of which there are regular printed forms, on separate sheets, to be sent by post, and which, when bound at the end of the year, form a volume) constitutes no inconsiderable part of his enjoyment. During the late war, accounts of this kind, not only from bailiffs, but from head gardeners, foresters, and land-stewards, were transmitted to such of the heads of families as held commissions in the army, even while they were on the field of action; and answers and directions were regularly returned by the greatest generals.

428. *Pleasures of farming.*—To a citizen who has altogether retired from a commercial or manufacturing concern, the cares of a farm must form an agreeable contrast to those of the counting-house, and will amuse and recreate, without fatiguing; for no mistake can be greater, than to suppose that there

is any enjoyment in retiring to the country and doing nothing there. Every retired man of business, who wishes to be as happy in the country as he was in town, must betake himself, if his residence be on a small scale, to gardening; and, if it be on a large scale, to farming and planting. Some of the operations of farming may be recommended to a country gentleman, as a substitute for hunting and shooting. We particularly allude to the occasional holding of the plough; an operation which calls into moderate exercise every part of the body, and which also engages the mind in keeping the furrow straight. We speak from experience, when we say that we consider this the most agreeable of all farming operations, and one by which a maximum of exercise may be obtained with a minimum of fatigue. The handles of the plough, draw, as it were, the operator after it, and the necessity of keeping his eye on two points, seen through between the pair of horses, occupies his attention. This attention, however, is only kept alive in ploughing with a plough in which the horses are yoked abreast; for in those cases in which they are yoked in a line, the straightness of the furrow does not depend on the holder of the plough, but on the driver of the horses. The holder of the plough, in this latter case, is little better than a machine, and the operation, as he performs it, can no more be compared to holding a plough and pair, as practised in Northumberland, Berwickshire, &c., than the wooden plough in Middlesex can be compared to the iron plough of Mid-Lothian. In short, the occupation of ploughing with two horses is a fit exercise for a gentleman and a philosopher; and we can readily conceive the country gentlemen of Britain, at some future time, substituting this, and other agricultural labours, for the sports of the field. We have known several gentlemen in Scotland, of independent fortunes, follow the plough a portion of every day, when they were not otherwise engaged, and the weather would permit. There can be no doubt, also, that emigrants take pleasure in this exercise; and we can readily imagine that the sons of some of our landed proprietors, who now cultivate their own grounds in Australia or North America, are far happier in labouring in their fields with their own hands, than they would have been had they remained at home, and been compelled to seek for occupation in mere amusement.

429. *Moral influence of farming.*—It has generally been thought that the habit of labouring with animals, or looking after them, has a tendency to brutalise, or at least to render coarse, rather than refined, farmers and their servants. This is, no doubt, to a certain extent true, where farming is pursued on the old system, and where all the animals of the farm are managed by main force; but, on the modern system of farming and managing animals, the whip and the goad are no longer employed; and horses, instead of being broken in by main force, undergo a similar treatment to human beings, commencing with their earliest years, on a system analogous to that of the infant schools. It is easy to conceive that this mode of managing animals must require quite a different kind of masters from what they have hitherto had; and that, by reaction, the gentleness and humane treatment which the man is compelled to show the animal, cannot fail to have a corresponding effect in humanising himself. This mode of treatment was first published by William Skirving, Esq., of Strathruddy, but it has only been lately adopted as a system, by some of the best Scotch agriculturists, and by the trainers of

cavalry horses.* When we take this into consideration, and also the benefits which agriculture is capable of receiving from its operators possessing some knowledge of natural philosophy, natural history, and chemistry, our readers will, we think, readily allow that farming, in all its branches, is likely soon to become as little debasing a pursuit as gardening. The essential reason why the English ploughmen are, as a body, so very far inferior to the labouring mechanics is, that the ploughman, while he enjoys exuberant health and vigour of body, has comparatively no mental exercise, either during his work or during his hours of leisure; the mechanic, on the other hand, requires much more intellect even to exercise his business; and, in his leisure hours, from his mind being comparatively cultivated, he can amuse himself with books. His mind, in fact, gets so strong from constant exercise, that it is continually craving for food. We have made this digression in favour of farming, because the pursuit ranks high, in our estimation, as a source of useful occupation to emigrants, and to proprietors who farm their own lands; and also as a source of healthful recreation and rational interest to the retired citizen who possesses what we have called a country mansion and farm.

430. *Situation of the farm.*—The part of a large country villa residence which is to be cultivated as a farm, will be most conveniently situated when it adjoins the park on one side, and when the farm buildings are placed centrally to the lands, and, at the same time, not far from the mansion and offices. However, in amateur farming, when on a small scale, there is no great objection to the fields which are subjected to the plough lying round the park, or, perhaps, at a short distance from it. In many cases, particularly where the park is large, and the soil a loam that admits of being readily converted from arable land to pasture, and the contrary, a part of the park may be kept under the plough. This part should lie towards the confines of the park, and it should be changed from time to time, by breaking up a fresh surface, and laying down in pasture what had been for some few years under the plough. In short, all the park, except twenty or thirty acres adjoining the house, pleasure-grounds, domestic offices, kitchen-garden, &c., may be subjected, in turn, to the convertible husbandry; and, in our opinion, should be so wherever the soil will permit, and the object is to create as great an interest as possible within the park. Some inconvenience may result from the single trees and small groups scattered over the park, impeding the operation of ploughing, harrowing, &c., when that portion of the park is in aration; but these inconveniences are unavoidable: and it must be recollected that the object of this kind of farming is not mere profit, but recreation, combined with useful produce, as well as with picturesque beauty.

* "The principal object in the treatment of young horses is, to render them docile; and the same gentle means are now used for that purpose, which are found to answer best in the treatment of children. They are rendered quiet and tractable by frequently patting, handling, and rubbing them, and taking up their feet. They are led about the barrack-yard to accustom them to the sight of mounted horses, and to the glitter of arms; and, in the course of four or five months afterwards, they are transferred to the riding-school to be trained. The good old plan, like that preferred by our ancestors for teaching boys Latin and Greek, was, to whip all fear and shyness out of them; but kindness and common sense have at last gained the ascendency, to the great delight of the organs of sensation, both in boys and horses." (*Education. &c., of Cavalry Horses in Britain; by Mr. Marshall, Assistant Surgeon to the 7th Dragoon Guards:* in the *Edin. Med. and Surg. Journal*, for 1838).

In order neither to injure the trees, nor to cultivate any portion of the surface that will not produce an abundant crop, it is advisable to leave, untouched by the plough, a circle of turf round each tree or small group, of a diameter three or four feet greater than the spread of the branches. Round the margin of larger masses, and also along the margin of the boundary plantation, there ought to be a border of turf ten or twelve feet wide, that is, sufficiently broad to admit of driving a carriage along it; which will at once be convenient for farm operations, such as carting out manure, carting home produce, &c., and serve as a drive, or a place for riding in, for the proprietor and his family, to survey the farm. It is the existence of green drives of this kind round the fields, and ornamental trees and shrubs in the hedges, and in groups and masses, which constitute what is called a *ferme ornée;* and, when these margins are mown, and the hedges and plantations that accompany them are planted or varied with rare or ornamental trees and shrubs, the interest and enjoyment produced by a farm may be considered as carried to the highest pitch.

431. *The kind of farming*, or of field culture, that will be commonly adopted in the villa park farm, will, for the most part, be of the ordinary description, such as raising oats for the carriage-horses, and straw for littering them and the cows; raising clover, lucerne, saintfoin, or tares, according to the soil and subsoil, for the cows and the farm horses; raising carrots, potatoes, and other root crops, for the cows and sheep, and partly for use in the house; and sometimes raising buckwheat, for the nourishment of game, &c. It may sometimes happen, however, where the object is chiefly recreation, that some of the kinds of farming peculiar to different districts of country may be adopted, to increase the interest of a *ferme ornée*. For example, where the soil and climate were suitable, the hop culture might be adopted; or apple, pear, cherry, walnut, or filbert orchards might be introduced. A willow-ground would be suitable for some situations; and a coppice of ash-trees for walking-sticks, crate-ware, or hop-poles for others, and so on. Near large towns, the raising of garden-crops and small fruits, such as currants, gooseberries, raspberries, strawberries, &c., will form a source of interest for the cultivator of the *ferme ornée*, and one which, in some cases, may afford a little profit. In other parts of the country, peculiar crops may be grown, such as madder, woad, and other plants for dyeing; liquorice, rhubarb, poppy, and other plants for druggists and apothecaries; and a very general source of interest, and occasionally of profit, is the raising of seeds for the field, such as those of mangold-wurtzel, turnip, &c.; or for the garden, such as those of peas and other pulse, carrots, onions, &c. We mention these crops to show the endless source of interest, and the constant occupation, which a *ferme ornée* is calculated to afford to an amateur who will devote his chief energies to it; but, at the same time, we consider it proper to state that, where only a little attention can be given, and where farming is not wanted as a profitable occupation, the commonest kind of produce in the given neighbourhood is the best, as it can be raised with least trouble, and may be entirely directed by a local bailiff, or, if very small, by a single ploughman.

432. *The farm buildings* for a villa or park farm, or for a *ferme ornée*, should, if possible, be situated at no great distance from the stable-court of the mansion; partly in order that the latter may be readily supplied with hay, corn, &c., from the former; and partly that they may be more readily

inspected by the master. The buildings which are to compose the farmery will depend on the kind of farming to be carried on; but as, in almost every case, there must be a portion of the farm devoted to the growth of corn, for the sake of the straw for litter, so, in every home farmery, a barn will be required. Where the extent of the lands under the plough at any one time does not exceed twenty or thirty acres, a threshing-machine is scarcely necessary; but, above that quantity, it will be found a source of both convenience and profit. The barn should generally form the main feature of the farm-yard; and, if threshing with the flail be adopted, it should be at least 20 ft. wide, and 40 ft. long, with the side walls 10 or 12 feet high, and open to the roof. Where a threshing-machine is introduced, the side walls require to be higher. The stable and cow-houses may be arranged to the right and left of the barn; and there may be a cart-shed on one side, with a granary over, and piggeries on the other, which, with a root-house, and a boiling-house for preparing food, may complete three sides of a square, or parallelogram, which should be open to the south. It is not, however, intended in this work to enter into the details of farm buildings; and we must therefore refer the reader, who may wish to know more on the subject, to our *Encyclopædia of Cottage, Farm, and Villa Architecture*. The farm buildings which are of most interest in a villa residence, are, the cow-house, dairy, piggery, poultry-houses, and rabbit-house; and with these we may also very properly include the aviary, the apiary, fishponds, &c.; not of course attempting to give any lengthened details on the subject, but merely offering a few general remarks.

433. *The cow-house*, in Britain, is a rude neglected building, compared with what it is on the Continent, among proprietors who take a pleasure in having fine cows. In Holland, the cow-houses, even of the common farmers, are kept in a very superior degree of cleanliness, and are lighted and ventilated in a much better manner than the cow-houses of villa residences are in England, though the greatest attention be paid to the dairies. One reason of this may be, that, in many parts of England, the winter is so mild, that the cows are kept during that season in open yards, having sheds attached, in which they are left to take shelter at pleasure; thus no skill is required for constructing the cow-house, and no art for its proper management. In Germany, however, from the severity of the climate, the milch cows are obliged to be kept in closed houses half the year; and hence the greater attention that has been paid in that country to the construction of cow-houses. It may also be observed, that, as the pastures in most parts of Germany are of a very thin and inferior description, the cows kept by proprietors who pay much attention to this subject are generally stall-fed throughout the year. We cannot, however, recommend this practice for England; since cows so treated can never be in so healthy a state as those which are allowed to take free exercise in the open air, at least a portion of every fine day. When only two or three cows are kept, instead of tying them up, we would allow them to run at large in a yard which had a proper cow-house attached to it, for them to shelter in; and we would only tie them up when they were being milked, or in extremely severe weather, when it might be necessary to shut them up in the cow-house. As a few points which deserve particular attention in the construction of cow-houses, we may mention the following. The floor on which the cow stands should be perfectly level; and behind the stall there

may be either an open gutter, or, what is preferable, one covered with an oak board pierced with holes, or with an iron grating, the holes of which are not larger than an inch across. Through this grating, or pierced plank, all the urine and recent dung will easily drop into the gutter, more especially with the occasional assistance of a broom; and the gutter may be either cleaned out once or twice a day, by lifting up the grating or plank, and applying the broom, or by turning on water at one end; and both the dung and the water should be conveyed by the gutter to the liquid manure tank. If the cows stand along the house, it should not be less than 18 ft. wide within, which will allow room for a passage at the cows' heads, as well as behind them. There ought to be windows with luffer-board shutters, that is, with shutters like Venetian blinds, on both sides of the house; and ventilating tubes from the sides of the walls, or the centre of the ceiling if there be one, to the ridge of the roof. The breadth allowed for each cow should not be less than 5 ft., and the length of the stall 8 ft.; and there ought to be a boarded or slate partition between every two cows, or so as to include two cows in each stall. The manger should be a trough formed of board, stone, or slate, raised so that the upper edge may be from a foot to 18 in. above the surface of the ground, or about the height of a cow's knees. As this manger is to contain green food, or grains when they can be obtained, as well as roots, hay, &c., it should not be less than 18 in. or 20 in. wide, and a foot deep. Where cows are intended to stand in the cow-house during great part of the year, the manger for each cow should be in three divisions; a large one in the centre for hay or herbage, a small one on one side for water, and one on the other side for roots, grains, or prepared mashes. A hay-rack for a cow-house is not only unnecessary, but even dangerous, unless placed as low as the manger; because it is found that when cows are in calf, raising their heads much above the natural level is apt to make them slip their calves. So strongly are the farmers of Normandy impressed with this idea, that they not only take care to have the floors of their cow-houses perfectly level, and the manger or hay-rack not higher than the cows' knees, but, when they turn the cows out to grass, they always harness them with a bridle and brechin, to prevent them from tossing up their heads. We have, in various works, referred to the Harleian system of dairy management, and we strongly recommend whoever intends building a cow-house, to consult the notices of that system, and of various others, which will be found given at length in our *Encyclopædia of Cottage, Farm, and Villa Architecture*, § 757. to § 764.

434. *The dairy*, in warm climates, or in such as are extremely cold, requires much more care in its construction, than in the temperate climate of England. A building with thick stone, mud, or turf walls, or with hollow brick walls, with a thatched far-projecting roof, standing east and west, and with its doors and windows in the north side and in the ends, will suffice for a dairy, in the warmest part of our island. The windows should have glass sashes for use in winter, they should open inside, and they should be covered on the outside with wirecloth, to exclude flies and other insects during summer, when they are kept constantly open. There ought also to be outside shutters, to exclude the sun, in the mornings and afternoons, from the east and west windows, and to keep in the heat during the severe weather in winter. A thermometer should be kept in the dairy, and the temperature should never be allowed to rise above 55°, or fall below 48° or 50°. In winter, the tempe-

rature is kept up by the warm milk being brought in, when newly taken from the cow; but, when necessary, this heat may be increased by placing vessels of hot water on the floor. Every dairy requires to have a scullery attached, with a fireplace and boiler, as the vessels which hold the milk require to be frequently washed in scalding hot water. Cleanliness is essential in every place where human food is to be kept, but it is particularly so in a dairy; as, if the milk be put into unwashed or carelessly washed vessels, it will soon turn sour; and, if the churn and other utensils used in preparing butter be not frequently scalded, they will give the butter an unpleasant taste, and prevent it from keeping. The dairy scullery may very conveniently be placed at one end, or on one side, of the dairy, taking care to have them separated by double doors, with windows for ventilation in the passage between, or with a window in the ceiling. This prevents the transmission of heat from the scullery to the dairy in summer; while, by shutting the windows and opening the doors in winter, heat may be admitted from the scullery to the dairy, so as to keep it at the proper temperature. These hints will be sufficient to show the importance of the subject, and to lead those who can deduce rules from general principles into the right mode of thinking respecting dairies; while such as require more minute details may have recourse to our *Encyclopædia* already quoted.

435. *The piggery.*—The great requisites here are, cleanliness, dryness, warmth in winter and shade in summer, a convenient mode of keeping and supplying food, and a place for the pigs to take exercise. These requisites are very well attained in the ordinary pigsties, which consist of a small open court for the pigs to feed and take exercise in, and a covered building for them to sleep in. The principal defect in pigsties of this kind is, a want of sufficient drainage in their courtyards, in consequence of which much more moisture is retained there, than is desirable for the health and cleanliness of the pigs. There ought to be to every pigsty an underground drain with a grating and trap (the latter as much to keep out dirt as the bad smell), communicating with the liquid manure tank, and to be washed out occasionally by the water used in cleansing the floor of the pigsty. Though pigs are generally considered to be dirty animals, yet they have some habits of cleanliness which are remarkable: for example, that of never doing anything dirty in their sleeping-place, but always choosing a particular corner of their sty for this purpose. Hence, if this natural tendency were properly seconded, a pigsty might be kept as clean as a cow-house or stable. The food for pigs is either of a dry or of a liquid kind. The latter ought always to be kept in a large tub, or in a tank under cover; where it is kept till it becomes in a state of fermentation; it being found to be far more nourishing for the pigs when sour than when it is sweet. For this reason, there ought to be two tubs or tanks, that the one may be filling with the liquid refuse from the kitchen, while the other is using; and they may be put under cover, or sunk in the soil, in order that fermentation may not be checked by the cold of winter. Where a proprietor feeds his own pigs, the greatest improvement that we can suggest is, that of having the pigsties connected with a grass field of one or two acres in extent, or an orchard; and of having various aromatic herbs sown among the grass; this would be a near approach towards making the flesh of the common pig as highly flavoured as that of the wild swine. Indeed, we cannot too strongly impress it on the mind of the reader, that the

great improvements wanting to almost all the modern systems of fattening animals are, arrangements for allowing them to take abundance of exercise while they are fattening, and supplying them with a greater variety of food, and especially of aromatic kinds.

436. *Poultry.*—Next to the kitchen-garden, there is no accompaniment of a country residence that contributes more to the comforts of its inhabitants than the poultry-yard; and, considerable as these comforts are, if the management of poultry were properly understood, they might be greatly increased. It is not our intention, in this article, to go at length into the subject, because it would occupy more space than we can afford, and, indeed, would be less useful as a guide, than some of those small popular works devoted entirely to the subject, which may be readily procured. One of the latest of these is entitled *Ornamental and Domestic Poultry; their History and Management.* By the Rev. E. S. Dixon; published in 1849. In order to determine the principles on which poultry-houses should be constructed, it is necessary to bear in mind that domestic fowls are natives of different countries and climates; that some are aquatic, and, consequently, have very different habits from those that naturally perch on trees or other lofty objects; that, in a state of subjection to man, they are, like other domesticated animals, liable to more diseases than when they are in a wild state, and that these diseases are generally incurable by art; and, finally, that they may be stimulated by rich food and heat, so as to produce eggs earlier, and in greater abundance, than they ever do in a wild state, or in cold seasons, in a state of domestication; while, on the contrary, the season of laying may be retarded by scanty food, and cold. Experience has shown that the taste of the flesh of fowls depends very much on the quality of the food which they eat. Musty or damaged grain, of any kind, will communicate a peculiar taste to the flesh of the common fowl, the goose, the turkey, or the duck, that has been fed on it, however carefully it may be dressed by the cook. All the different species of poultry are exceedingly pugnacious, not only with other species, but even with their own kind; and all fowls, except the aquatic, have the greatest dislike to damp, and suffer sooner from it than from any other cause. All fowls are more or less omnivorous, and they consequently require, not only corn and green vegetables, but insects, worms, and similar vermin, or the flesh of animals minutely divided, so as to serve as a substitute for these objects. The most remarkable circumstance connected with the common fowl is, that, though it is domesticated in every part of Europe, it is a native of the warmest parts of Asia; and from this circumstance, independently of other considerations, it requires greater warmth in its lodging-place than either the duck or the goose, which are natives of Europe; or the turkey, which is a native of North America. Hence, the necessity of having a separate house for every kind of fowl which is to occupy the poultry-yard, unless we except one or two kinds of similar natures, such as the duck and the goose, which, in some cases, may lodge in the same building.

437. *The poultry-yard.*—The situation of the poultry-yard should be open and airy, but at the same time thoroughly sheltered from the prevailing winds of the locality, and, in England, more especially, from the north, north-east, and north-west. In general, the best situation is one which slopes to the south-east, with the poultry-houses in the upper part, with water for the aquatic fowls in the lower part, and a lofty open shed, in a central position,

for feeding the poultry under during rain, and for the peacocks, peahens, and Guinea fowls to roost under in severe weather. This shed should also be so far extended as to include in it a few square yards of surface, to be dug out to the depth of a foot or more, and filled up with dry sand, for the fowls to take what may be called a sand bath, which is the principal means they have of ridding themselves of the body vermin with which they are infested. In addition to this shed, the poultry-yard, if it be large, may contain two or three trees, as well to afford shade and shelter to the common fowls, as for a roosting-place to the pea fowls and Guinea fowls during summer, and to harmonise the poultry-yard with the woody scenery of the place. There ought also to be, in a proper situation, a covered tank for receiving the washings of the poultry-houses, and retaining the liquid till it ferments and thus becomes fit for manure. The soil is, perhaps, of more consequence than even the situation; for, unless that be naturally quite dry, or rendered thoroughly so by art, however suitable the situation and treatment of the fowls may be in every other respect, nothing can be more certain than that they will not thrive. The poultry-yard should, of course, vary in size according to the number of fowls which it is intended to keep; but more still according to the extent of ground which the fowls are allowed to run over, beyond the limits of the enclosure. If the fowls are never to be allowed to go beyond the poultry-yard, then we should say that the very smallest space in which the common hen can be kept in perfect health, and so as to lay wholesome eggs, even though the poultry consisted of not more than a dozen fowls, is the sixth part of an acre. The reason why so much space is required for so few birds is, that, to be maintained in health, they require a good deal of exercise, and they also require to eat grass, and different other kinds of green food, and to pick up insects and sand, and other objects. Now, though all these articles might be supplied to them in the poultry-house, or in an enclosure in front of it, of a few yards square, yet it is certain that the fowls, when so confined, would not keep their health. The criterion of the size of the poultry-yard, therefore, where the poultry are never to go beyond it, is the growth of the herbage on its surface; for, unless this be produced in a certain degree of vigour, it will neither support insects nor snails, and, consequently, the fowls will be deprived of their animal food; and every cultivator knows that grass and other herbage will not grow with vigour where it is much trodden on by fowls. Where different kinds of poultry are kept, for the supply of even a moderate-sized family, the poultry-yard, where there was no other range allowed for the fowls, would require to be two or three acres in extent; but, as this would be expensive, and in many cases inconvenient, the poultry-yard ought always, if possible, to be so contrived as to have a free communication with the open fields, or even with the nearest public road. There is never any danger of losing the fowls, unless by thieves; for not only will they return home every night, at roosting-time, but at any time during the day, on the appearance of rain or thunder, or at any hour at which they are accustomed to be fed. When the poultry-yard is at some distance from a field or the public road, and a place intervenes into which the poultry cannot be admitted to run at large, a pathway through it may be fenced off, with open lattice-work on each side, and with a projecting roof to throw off the rain; or, if the distance does not exceed a few yards, a dry tunnel may be made under ground, or an enclosed way over a wall, or through any out-building. We have frequently

seen tunnels of this sort under barn floors, to admit fowls from the farm-yard to the rick-yard, without entering the barn; and we conceive an enclosed gangway fixed to a garden wall, or to the fence of a frame-ground (such as is shown in several of Mr. Rutger's designs, in preceding pages of this work), would answer the purpose of conducting the fowls from the poultry-yard to the public road.

438. *All poultry-houses* should have the following particulars attended to in their construction. They should all face the south or south-east; and all should have walls hollow, or of sufficient thickness to exclude extreme cold in winter, and excessive heat in summer. A 9-inch brick wall, like that employed in England, is not sufficiently warm, even for the climate of London, unless the bricks be kept so far apart as to form a vacuity of at least 2 in. in the interior of the wall. The height of the side walls should not be less than 7 or 8 feet; but 9 or 10 feet would be preferable, as admitting more perfect ventilation by openings, covered with latticework or wire, immediately under the roof. The side walls should be plastered with cement, or with sound lime and sand, so as not to harbour insects, and to admit of being washed to destroy their eggs, if any should have been deposited on them. The ceilings should, in general, be treated in the same manner, and the floors should be laid with smooth pavement, so as to admit of being washed out as clean as any kitchen floor. In every poultry-house there ought to be a window, with the sill about 3 or 4 feet from the ground; the sashes being glazed, and constructed so as to slide past each other in grooves. There should be inside shutters to these windows, for use during winter; and outside shutters, luffer-boarded, to close during summer, when the sashes are kept open all night. Close under the eaves, there ought to be an opening for ventilation, exactly over the window, of the same breadth, and a foot in depth, with a wire grating, and a shutter on the inside, to slide in grooves, and which should have a cord attached to each end, hanging down within reach, so as to draw it on or off at pleasure. The roofs of all poultry-houses should project sufficiently to protect from rain the side-walls, and the outside stair or ladder, which is made for the fowls to get up to their roost; and there ought always to be gutters, to collect the water from the roof, so as to keep the ground immediately in front of the poultry-house doors as dry as possible. Each kind of poultry should have two apartments: one for roosting in, and the other for laying and sitting in; and, in large establishments, there may be two or three other houses, for fattening in, for confining individuals rendered unfit to be at large from their pugnacity or from disease, and also for rearing young chickens, unless there should be plenty of room for this purpose in the laying-houses.

439. *Fattening poultry.*—With respect to fattening poultry of every kind, it may be proper to observe, that the preceding recommendations as to fattening-houses, have been given on the supposition that every kind of cramming and confinement in coops for fattening is to be given up; and that the fowls are to be kept constantly in good condition, and only confined for a week or two in a feeding-house, with a small yard attached, immediately before being killed. We may also observe that fowls, so far from fattening better alone and in solitary coops, actually eat more, and consequently fatten faster, when several are kept together, and free access allowed them to food at all hours of the day. A corresponding system has for some years past been adopted for

feeding sheep and cattle, and with similar success. Having thus noticed the requisites common to all poultry-houses, a very few words will suffice to state what is peculiar to each.

440. *The hen-house*, as generally lodging the most numerous and useful class of poultry in a yard, requires to be the largest. The roosting-house should contain, at least, a square foot of area for every fowl that is to roost in it; this average allowing rather more than a square foot for fullgrown fowls, and less for chickens. The perches for roosting on may either form a slope from within 3 ft. of the ground, to within the same distance of the ceiling; or they may form a floor 4 ft. below the ceiling; the perches being placed across the house, and about 18 in. apart. The form of these perches ought to be square or angular in the section; for gallinaceous fowls cannot bend their toes so as to grasp a round perch. The entrance for the fowls should be on a level with the roosting-floor, from which the ascent and descent on the outside may be by a ladder formed by nailing fillets of wood at regular distances across a board, to serve as steps; or, which is more architectural, by neat brick or stone steps, projected from the wall. In the inside, there may be a portable wooden ladder, to enable any chickens which may have fallen from the roost during the night to get up again in the morning, so as to go out with the other fowls, at the opening at the top of the outside stair. There ought to be a shutter to this opening, which should be carefully closed every night, after the fowls have gone to roost, in order to exclude vermin. The great advantages of having the perches all on one level, on what is called a roosting-floor, instead of having them sloping like the stage of a green-house, are, that the whole of the fowls roost in the upper, and consequently warmest, part of the house; that there is no scrambling among the stronger fowls to get to the highest perch, in consequence of which the weaker ones are often thrown down and hurt; and that there is no temptation to the stronger fowls to fly up to their perches at night, or fly down in the morning, which always deranges the weaker ones that are obliged to go up and down to their perches by the ladder. The shutter to the opening at the top of the outside ladder should be opened every morning at sunrise; or, when the sun rises earlier than five or six o'clock, at whatever hour the workmen are accustomed to go to work, in order that the fowls may get out to pick up snails, worms, and insects, while the dew is on the grass, and before these vermin have returned to their holes in the soil. Afterwards, the large door and all the windows of the roosting-house should be opened, and left in that state till towards the time when the fowls usually go to roost. The floor, in the mean time, should have been carefully washed out, so that, on the return of the fowls, they may find their roosting-house perfectly clean and sweet in every part.

441. *The laying and sitting-house* for the common fowls may be of the same dimensions as the roosting-house; but, instead of being furnished with a framework of perches near the ceiling, there should be a number of boxes about 18 inches square, each with a little doorway cut in it in front, for the hen to enter and come out. A row of these boxes should be ranged along the side and back walls on the floor, for sitting-boxes; above these, if many fowls are kept, may be another row of boxes for laying in, with similar doorways, and a ledge along them in front, broad enough to allow the hens to walk along it, and which may be ascended to by a ladder (like that of the roosting-house) at each end. When the hens seem inclined to sit, the requisite number of eggs

is put into one of the lower tier of boxes for the hen to sit on; and she should be supplied with food and water in the house, to prevent her from leaving her eggs for more than a few minutes at a time. Some authors direct the laying-boxes to be always raised 3 ft. from the ground; but this is unnecessary if only a few fowls are kept, and the floor is quite dry, and where the hens have a different house for laying in, from that in which they roost. As the floor of the laying-house will not be so dirty as that of the roosting-house, and as a moist floor would occasion cramp, and consequently death to the young chickens, it should never be washed, but only strewed with clean sand every day, the dirty sand of the previous day being first swept out.

442. *Warming the houses for common fowls.*—Wherever it is intended to have an abundant supply of eggs in the winter season, provision should be made for supplying artificial heat to all the houses occupied by the common fowls. The temperature required should not be less than 60°, because in no case do fowls lay more abundantly than in common cottages, where they may be said to live with the family, and where the temperature varies in the winter season from 50° to 70°. The means of supplying heat may be a smoke flue conducted along the back and sides of each of the houses (but not along the front, as it would interfere with the entrance); or hot-water pipes may be used in a similar manner; or there may be a small stove in each house. By a little contrivance one fire may be made to heat three or four houses. It may also sometimes happen that the common fowl-houses may be built over a cow-house, or over a dung-pit; or what might frequently be the case, a lining of dung might be heaped up, when the artificial heat was wanted, along the outside of the back wall of the fowl-houses. In general, the difficulty is not so much in contriving means of heating, as in convincing persons who keep fowls, that artificial heat is necessary to induce them to lay. Everybody knows that eggs are cheaper at Midsummer than at Christmas; though but few people are aware that the only reason for this is, the increased warmth of the former season.

443. *A fattening-house for common fowls* may be of the same dimensions as the roosting-house and the laying-house Where the fowls are fattened in coops, these should be placed round the walls; but, as we recommend the free method of fattening, that is allowing them to be at liberty, with plenty of food to eat when they please, we consider no furniture necessary, farther than some roosting-poles, which may be placed round the walls at the distance of 3 or 4 feet from the ground, and vessels for containing the food and water, which may be set in the middle of the floor. In front of the fattening-house there should be a space enclosed as a yard, for the fowls to take exercise in; and in this yard they may always be fed in mild weather.

444. *The turkey-house* may very properly adjoin the common poultry-house, and it need not differ from it in any particular, except that all the details of fitting up may be one fourth part larger. The opening at the top of the outside stair should be one-fourth higher, and one-fourth wider; and the roosting-poles should be 2 ft. apart. There should be a laying-house, in which the boxes may be 2 ft. square, and also a feeding-house with a feeding-yard.

445. *Houses for Guinea fowls and pea fowls* are not wanted, as these birds can seldom be brought either to roost or lay in any regular house. An open shed or a tree will generally be found their roosting-place, and if the poultry

enclosure be surrounded by a thick hedge, or if it contain clumps or thickets of shrubs, their nests will commonly be found there.

446. *Houses for aquatic fowls.*—Where only a few geese and ducks are kept, one house will be sufficient for them, provided it be divided into three parts; one for the common lodging-place, one for laying and sitting, and the other for fattening. No other furniture or fittings-up are requisite than boxes for the laying and sitting-house; those for the ducks may be 18 in. wide, and 2 ft. long; and those of the geese proportionately larger. It may be here observed, that, in order to keep ducks and geese, it is not necessary to have either large deep ponds, or running water. A basin of a few yards in diameter, and deep enough to admit of their swimming in it, will be found quite sufficient, provision being made for a frequent supply of fresh water. Where geese are kept in any quantity they require a yard by themselves, and an extensive range of pasturage, as they are fond of grass, and it appears essential to them; and as, when confined with other fowls, they become very pugnacious and very much harass hens and turkeys.

447. *Fowls may be kept on a small scale*, so as to supply the family with eggs, by purchasing hens in a laying state, and furnishing them with a portable wooden house, containing a sufficient number of nests; placing this in a warm situation, as in a stable or cow-house, or adjoining a kitchen or other room having constantly a fire in it; and contriving free ingress and egress from the public road, or from some extensive space, in which the fowls can run about and find vegetables and insects. Besides this house for laying in, there would require to be another adjoining it, and of the same size, with perches for the fowls to roost on: a wooden house 6 or 8 feet high, and about the same length and breadth, would be sufficient for roosting ten or twelve full-grown fowls, and one of half that size would be sufficient for containing nests for them. A very common mode in which small fowl-houses of this description might be heated is by a pipe of hot water, communicating with the cistern at the back of the kitchen fire; and many other methods might be suggested. In short, if the reader will bear in mind, that the common fowl, in order to lay abundance of wholesome eggs, requires abundance of farinaceous food; an extensive range of surface for exercise, and for picking up green meat, insects, worms, and other animal food, and the small stones and gravel necessary for digestion; and that when the fowl is not in active exercise, it should be in a temperature of between 50° and 60°, he will be at no loss for contrivances not only to keep fowls, but to insure an abundant supply of eggs during the winter season. Fowls should also always have access to mortar, lime-rubbish, or chalk; as if they have not, they will lay eggs without shells.

448. *The pigeon-house, or dovecot.*—The common pigeon, of which there are many varieties, may be kept in a small house, in a manner similar to common fowls; but it succeeds better in buildings somewhat elevated, or in low buildings in which the place of entrance is made in the roof; because pigeons fly higher than any other domesticated birds. A very convenient situation is a loft over some other building, or when there are various outbuildings, a turret may be added where it will have a good effect in an architectural point of view, and the interior turned into a place for pigeons. All the fiting up requisite is to place nests against the wall; these nests consist of open boxes, about a foot square, with the lower side projecting 3 or 4

inches for the birds to light upon. The best food for pigeons is peas, but they will eat oats and barley like the common fowl. Where pigeons have not an extensive range, it is common to place in the pigeon-house a lump composed of lime rubbish, loam, salt, and other matters, for them to peck at occasionally, and which it is found prevents them from eating the lime from chimney tops, and other parts of buildings which they frequent. In general, a pigeon-house may always be made an ornamental object, whether it forms a detached building, or an appendage to other offices. As young pigeons are highly valued in the kitchen for pies, and full-grown ones for substantial, savoury, and stimulating food, a pigeon-house is a very desirable appendage to every suburban residence that has land attached; but, where there is no land, it is scarcely fair to keep pigeons, as they must necessarily live on our neighbours.

449. *The aviary* is an enclosure which should always, if possible, be of considerable extent, containing houses for different kinds of birds. These houses may be small rustic structures, each with an enclosed court, and covered with netting or wirework, to prevent the birds from flying away, as well as to prevent the intrusion of other birds in a wild state. In these small enclosures the young are reared; and, when full-grown, they are allowed during the day to go at large in the aviary ground. An aviary, where there are five or six different kinds of birds to be kept, should never be attempted where there is less than an acre of ground; because few things disfigure either grass or plants so much as a superabundance of fowls among them, while the injury to the birds themselves, for want of space for exercise, is proportionately great. The birds commonly kept in aviaries in the neighbourhood of London are, gold and silver pheasants, partridges, quails; red, black, and wood grouse; pigeons, turtle-doves, Muscovy ducks, the Canadian goose, the bustard, gulls, and curious varieties of the common fowl, such as bantams, &c. There is however no limit to the number of species and varieties of birds that may be kept in aviaries, provided there are abundance of space, and ample pecuniary means. A number of the exotic birds require artificial heat in their roosting-places during the winter season; but this is not the case with the kinds mentioned above as commonly kept in aviaries. The handsomest places of this kind that we know, near London, are at Woburn Abbey in Bedfordshire, and at Cobham Hall in Kent. There was formerly a tolerably complete aviary at the Duke of Devonshire's villa, at Chiswick; but it has been given up for the last ten years. The most complete aviary in England for singing birds, is at Knowlesly Hall, near Liverpool.

450. *The swan* is one of the greatest living ornaments to a piece of water of two or three acres in extent; and it is useful in keeping the surface of the water free from weeds. Swans require very little care from man, except that of feeding them during severe weather in winter, and having a small house for the protection of their young. Whenever there is a considerable piece of water in the grounds of a residence, there may not only be swans, but ducks of different kinds, curious geese, gulls, and other aquatic fowls. The swans, as we have above observed, are useful for keeping the water free from weeds, and the others for keeping the adjoining grounds free from worms, slugs, snails, &c.

451. *The rabbitry.*—Rabbits may frequently be kept in the aviary, though, unless the extent of ground be considerable, they are better in an area by

themselves. There are two kinds of rabbits reared for the market; one is the common wild rabbit, which is kept in warrens, and the stock taken by nets or traps, as it is wanted to be used or sent to market; and the other, the animal in a highly artificial state, kept in hutches or small boxes, and fattened like fowls for killing: the flesh of rabbits of the latter kind cannot be considered as wholesome; and, leaving the treatment of them to those who advocate cramming fowls and stall-feeding oxen, we shall close what we have to say on this subject, by recommending the keeping of rabbits, of what are called the wild or common kind, in a house with a small yard attached, to serve as a warren or place of exercise. The house may form one of the same range as the poultry-houses; and the warren may either be close to the rabbit-house, or at any convenient distance from it, communicating with it by a covered way. The artificial warren may be 50 or 60 feet square: if the subsoil be dry, the surface or floor of the warren may be sunk 2 or 3 ft., and surrounded by a wall rising 3 or 4 feet above the natural surface of the ground; but, if the subsoil be moist, then the warren may be made in the form of a raised ridge, and surrounded by a dwarf wall, surmounted by an open fence. The use of the warren is for the rabbits to take exercise in by burrowing; and hence, when the soil is not sufficiently free for this purpose, it ought to be made so by deep trenching, and by the addition of sand. In order to admit a free circulation of air to the warren, and also to admit of seeing it at pleasure, it should never be surrounded by a high close fence; but a sunk wall will always be necessary, to prevent the rabbits from burrowing into the adjacent grounds. The rabbits should never be fed in the warren, but always in the rabbit-house; and this should be done at stated times, in order that the rabbits may acquire the habit of appearing there regularly.

452. *The apiary* is another source of interest to all who live in the country, and fortunately it may be indulged in by the humblest labourer, no less than by the wealthiest citizen, provided there are fields and gardens in the neighbourhood containing flowers. A beehive, when there is no room for it anywhere else, may, like a pigeon-house, or even a garden of pots, be placed on the roof of the house. Much has been, and continues to be, written on the subject of bees; and the kinds of hives are proportionately numerous. Instead of pointing out what we consider to be the merits and defects of the principal of these, we shall limit ourselves to observing that, where little or no attention can be paid to the bees, except perhaps at the swarming season, the common hive of the country, whatever that may be,—for example the straw hive in Britain and on the Continent generally, the trunk or pipe hive in Poland, and the cork hive in Spain and the Canaries, will, in our opinion, be found the best, because everybody understands it; but that, where there is leisure, and a disposition to attend to bee culture, Nutt's hives are by far the best that have been yet invented. It has been a great object with the inventors of hives to devise means for taking the honey without killing the bees; and Mr. Nutt not only effects this, but what is of incomparably more importance, he prevents young bees from being generated, except when they are wanted, and consequently prevents swarming with all its attendant troubles. The principle upon which all Mr. Nutt's improvements are founded, is that of regulating the temperature of the hives, so that the bees may breed in one temperature, and make their honey in another. Under a certain degree of heat, the queen bee will not lay eggs, nor will these eggs be hatched; while

the process of collecting and storing up honey goes on without much reference to temperature, provided the sun shines. Nutt's hive requires to be placed under some description of cover or bee-house. This should, in general, be so contrived as to leave free access to the hive behind, and hence it can never be placed against a wall or against a house. It may be in a detached building, consisting of a rustic structure covered with bark; or it may be placed under a roof open on every side, the props being rustic pillars, and the roof being covered with thatch, reeds, woodman's chips, spray, bark, heath, or similar materials. *Fig.* 217. shows a handsome bee-canopy of this kind, covering one of Nutt's hives, which stands in a recess in the pleasure-ground at Chipstead Place, in Kent. At Bayswater, our Nutt's hive is placed in the front of a veranda (see *fig.* 218.), in a line with its pillars, and is consequently protected from perpendicular rain; but as the excessive heat of summer is equally injurious with rain, it is protected from that, and from the sudden influence of either heat or cold in winter, by a casing of broom and heath. The back of the hive, where the doors are, on opening which the bees may be seen at work, is most conveniently examined from the veranda.

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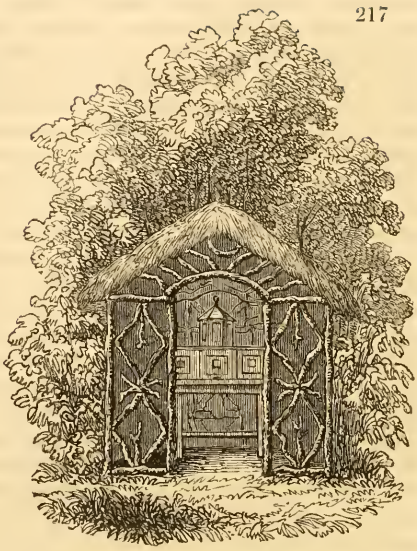
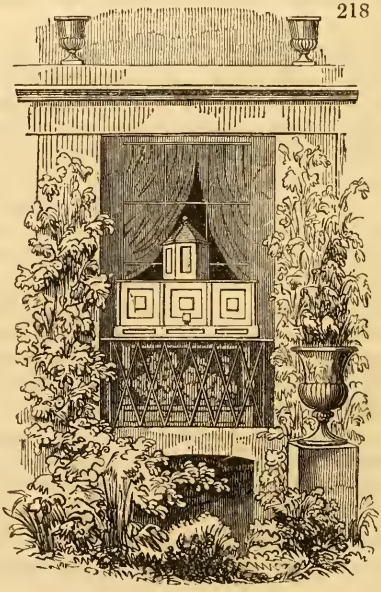


218



453. *The fishponds.* — The custom of keeping fish in the grounds of country residences is much less common now than it was in the days when, from the whole country being Catholic, fish was essential as an article of food two days in every week; and when the communication between the interior and the sea was so slow, as to

be unavailable for the transport of fish. Nevertheless, fishponds, wherever they can be made, are not only sources of beauty in the landscape, but of interest and use with reference to the fish that may be reared and fed in them. In every garden, however small, and even in every green-house or conservatory, there may be a vase or small basin for gold and silver fish. These require very little care, whether in the house or in the open air, except, in the latter case, breaking the ice in winter, to admit air when the water is frozen over. Should the fish, however, be intended to breed, the pond must be in a warm situation, fully exposed to the sun, so as to raise the temperature of the water early in the season; and the margin must be shallow and sandy, as it is only in shallow water on a sandy bottom, or on roots or bundles of sticks, that fish will deposit their spawn. The carp, the tench, and the perch are the most convenient fishes for managing in artificial ponds; and, throughout Europe, they are more used for this purpose, than any other kinds. Of these, the carp is incomparably the best, on account of its astonishing fecundity, its large size, and the rapidity with which it grows when well fed, notwithstanding the great age which it has been known to attain. To manage carp properly, three ponds are requisite; one for breeding, another for rearing, and a third for feeding. In the spawning or breeding pond, full-grown fish should be put early in Spring; the season for spawning being from the latter end of May till the beginning of July, the time varying according to the warmth of the season. After spawning, the old fish are put back into the feeding pond, and the young fry left to themselves till the spawning season approaches in the following year. They are then removed to the nursing-pond, where they remain about two years, the time varying according to their growth. Every season the nursing-pond is drawn, and all the fish which are above 5 in. in length, put into the feeding-pond; whence the largest are taken out as wanted for use. When wanted of extraordinary size, they may be kept in stews, and fed with garbage, boiled potatoes, bread, boiled rice, or any soft substance which does not require mastication. Their natural food consists of the larvæ of insects, worms, and soft aquatic plants. The pond in which the feeding fish are kept, should be rather deep, and have a soft marly or muddy bottom, and a warm exposure; the water should be soft, and this it generally is on marly soils: when carp are fed in stews, they should be kept in rain water. A carp will usually attain the weight of 3 lbs. in six years, and 6 lbs. in ten years. The largest ever caught was not quite 20 lbs. weight. They are in season from October to April. The whole business of stocking ponds, and raising and fattening carp, is reduced to a regular system, which is practised extensively in the interior of France and Germany, and more particularly of Prussia. But in villa pleasure-grounds, it may be tried with a single pond; taking care to reduce the number of fish by using some of the largest every year in the proper season. From 300 to 400 carp to an acre, is the number allowed in the feeding-ponds in Prussia; but in these ponds very little food is given, and hence the range required is the greater. The tench is generally kept in the same pond as the carp, and requires the same treatment. It will, however, thrive, and even attain an extraordinary size, in situations, and in stagnant fetid water, where no other fish would live. The tench is very tenacious of life, and requires less oxygen than any other fish. Mr. Yarrell, in his excellent work on the *British Fishes*, says that the tench can breathe when the quantity of oxygen is reduced to the

5000th part of the bulk of the water; ordinary river water usually containing the 100th part of oxygen. Hence, tench will thrive in deep muddy holes, where no other fish could exist; though, in this case, they should be kept a week or ten days in clear water, before using for the table, in order that the muddy taste may go off. The tench is covered with a thick slimy matter, which is said to have a healing property for other fish if they rub themselves against it when they are wounded; and hence the tench is vulgarly called the fishes' physician. The perch requires clearer water than either the carp or the tench, and will thrive in rivers where the current is not too rapid. When kept in stews, there should be a stream of water constantly running through these. The perch eats worms, flies, and young fish of its own kind, and also minnows, and small roach, dace, &c. The eel thrives in deep, muddy, shady ponds, where, however, the water must not be stagnant. Eels attain the greatest size in millponds, or in muddy rivers, in the soft banks of which they can bury themselves 12 or 16 inches deep, while the stream continues constantly running its course over the mud, and where they are frequently found, and dug out or speared, in the winter. In stews they may be fed at discretion, with snails, frogs, worms, &c.; and will attain a large size, but they are seldom kept in ponds, as they destroy other fish. It is not known to many persons that the eel, in the summer season, frequently quits the water during the night, and wanders among grass in search of slugs, frogs, and worms; yet this is the case, and where there is a mill-pond, or a dam between two ponds, large eels may often be seen in a warm summer's evening, when the meadows are wet with dew, making their way, with an undulating, or wriggling, though not very rapid motion, through the long grass, in search of food, or from one pond to the other. The pike grows to a large size in stews or ponds, where it requires clear and hard water; but it is so voracious that its keep is very expensive, as it devours all the other fish, and even all the fry of its own species that come within its reach. "Eight pike," says Mr. Jesse, "about 5 lbs. weight each, consumed nearly 800 gudgeons in three weeks." "In default of other fish," says Mr. Yarrell, "pikes will seize moor-hens, ducks, or indeed any animals of small size, whether alive or dead." They swim rapidly, and dart at their prey with great fierceness; and from this, their extraordinary strength and boldness, and their voracity, they afford more sport than most other kinds of fish to the angler. The roach and dace are sometimes kept in ponds, and have a beautiful appearance in the water, but their flesh is insipid and woolly. Gudgeons, and other common small fish, are usually found in rivers; as are trout, which, however, may be kept, and will attain a large size, in ponds which have a hard rocky bottom, clear water, and a constant stream running through them.

454. *Other animals that may be kept in country residences.*—Those who wish to add to their sources of recreation and amusement may keep land tortoises, much in the same manner as we have proposed to keep rabbits, but with a smaller exercising-ground, and they may feed them with corn, meal, and succulent vegetables, and use them as food; or they may keep them in the open garden, being fed with lettuces, cabbages, &c., and allowed to burrow in the soil during winter. Tortoises, however, cannot be kept, except in mild situations, not much above the level of the sea, for they are very impatient of cold. The tree frog, which feeds on flies, might be kept in cages, or at liberty, in green-houses and vineries; either merely as an orna-

ment, or to destroy the flies and other insects: and the large green frog might be kept in ponds, and fed for culinary purposes, as it is in France, Germany, and Italy. The edible snail (Hèlix pomàtia *L.*) might be kept, as it is near Vienna, in large pits covered with boards, and fed with cabbage leaves and other vegetables. The river crawfish (*A'*stacus fluviátilis) is not very common in Britain, but it abounds in some parts of the Continent, particularly in the marshy meadows of the Vistula, near Warsaw. These fish are reckoned a great delicacy on the Continent, either boiled and eaten cold like shrimps, or put into soup. In England they are found in meadows on the margins of the Trent; and it might amuse a curious suburban resident desirous of making experiments, to try to subject them to cultivation. The medicinal leech, which lives chiefly on the spawn of fish or of frogs, might easily be kept in small ponds, provided care were taken to prevent it from getting to the fishponds; during summer, the leeches come out on the grass in search of snails and other food during night, and during winter they go into deep water. The silkworm, wherever there is a white mulberry tree, or abundance of lettuces, may be reared, and silk produced as an amusement. The eggs, which may be procured in Covent Garden market in May and June, require to be hatched in a temperature of from 60° to 80°, on dry shelves, kept clean and well ventilated, and the worms require to be carefully tended and well fed. The silk, however, produced in England, is of no value but as a curiosity, from its want of tenacity; the thread only acquiring the necessary toughness to enable it to be reeled and spun with a view to profit, in a hot and dry climate.

455. *The Ice-house.*—Ice may be kept in a dry cellar with as much ease as coals, wine, or beer. All that is necessary, is to have the walls and roof of extra thickness, so as to exclude heat; or to have them built double, or battened, and lathed and plastered. By the last process, a vacuity is formed completely round the sides and roof of the ice-chamber; and a similar vacuity should be formed under the floor, communicating with a drain having a trap, so as to convey away any water that may collect from the thawing of the ice, without admitting fresh air by the drain. This cellar should either have double doors placed 2 or 3 feet distant from each other; or, when the ice is put in, an ample space should be left between it and the door, in order to allow room for a large quantity of straw, to serve as a nonconducting medium to the heat that would otherwise pass through the chinks of the door. In filling an ice-cellar, the ice, having been first collected and laid down near it, is broken into small pieces, and then pounded till it becomes a powder composed of particles not larger than those of sand or coarse salt. It is then carried into the cellar, and laid up in a heap, beating each layer as deposited, so as to form the whole into a compact mass, and occasionally sprinkling a little water over it, in order to consolidate it. An improved method consists in using water impregnated with salt, by dissolving 10 lbs. of common salt in 10 gallons of cold water, and pouring it on the ice through a common garden watering-pot, every 2 or 3 feet in thickness, as the cellar is filling. The ice, in cellars filled in this manner, will be found when opened in summer, to consist of one solid mass of ice, which cannot be broken without the pickaxe. It will keep much longer without thawing in the cellar, and also much longer when exposed to the open air; because salt water, and consequently salted ice, has a much less capacity for heat than fresh water or fresh

ice. This mode of keeping ice was first adopted by Mr. James Young, gardener at Willford House, Nottinghamshire. He was induced to try it, because the icehouse there was placed in a very exposed situation, the sun shining on it from rising to setting. Before the use of salt, it was found impossible to keep the ice above a year; but, afterwards, it was kept three years, and the last of it was found to be as good as the first.

456. *The ice-cellar.*—The cool temperature by which the ice must be surrounded, to make it keep, has suggested the idea of forming niches or shelves within the ice-house, or in the passage leading to it, for keeping articles cool in the summer season. This has been tried with great success in the case of common ice-houses; and it would in all probability succeed in the case of ice-cellars, though the difficulty in this last case would perhaps be increased from the want of ventilation. We have already, in this work, expressed our opinion, that it would be more convenient to have the place for keeping the ice connected with the dwelling-house, either as a cellar under the living-rooms, or as a cellar under some of the out-door offices, and to place it under the care of the butler, than to form it in the park or pleasure-grounds, and place it under the care of the gardener. However, as the common prejudice is in favour of ice-houses built in the usual manner in the open grounds, we shall here describe one of these formed according to the best principles.

457. *Out-of-door ice-houses.*—Where the soil is wet, and does not admit of underground drainage, the icehouse may be constructed above the natural surface, and afterwards surrounded and covered with a mound of earth; it being farther protected from the heat by trees or shrubs, or what is perhaps preferable to either, by a covering of giant ivy. The common form of out-door ice-houses is an inverted cone, and the supposed advantage of this form is, that as part of the ice thaws, the remainder slides down the sides of the cone, and still keeps in one compact body. This is no doubt true; but the advantage by no means compensates for the difficulty of constructing an ice-house in the conical form. A plain square room, with double side walls, say a foot apart, a double arch over, and a double floor under, which can be built with the same ease as any common cellar, will, all other circumstances being alike favourable, keep the ice as long as any conical form whatever. Where there is a doubt of being able to exclude the heat, treble walls, roof, and floor may be resorted to; and the entrance, which should always be three or four yards in length, instead of being straight, may be made crooked, with a door at each turn. The space between at least two of the doors should always be filled with straw; and, to render the removal of this straw easy, when there was occasion to pass from the outer door to the ice, it might be put into two or more canvass bags, like immense cushions, which might be hooked to the ceiling and the sides, so as to close up every interstice. The space between the second and third doors may be widened, and fitted up with shelves for holding articles which require to be kept cool, but not to the same degree as if they were placed in the ice-house. *Fig.* 219. is a section, and *fig.* 220. a ground plan, of an ice-house on the inverted cone principle, but of an improved construction. This form, as usually employed in English country seats, frequently fails in keeping the ice, from not having double walls and double or treble doors, or from imperfect drainage; but the plan now submitted is free from these defects, and will keep ice throughout the year in any climate, if covered with a sufficient thickness of earth or straw.

In this design, *a* is the well or cellar for the ice; *b*, a drain from its bottom, for carrying off such water as may be produced by the gradual thawing of the ice; *c*, a trap in this drain to prevent the external air from communicating with that of the ice-house; and *d*, a leaden pipe from this trap, connected with a small pump at *e*. The object of this pump is to

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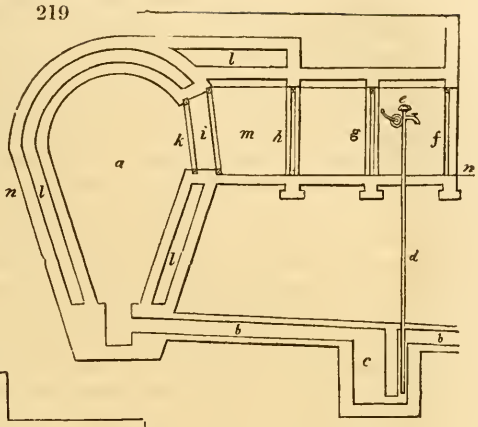

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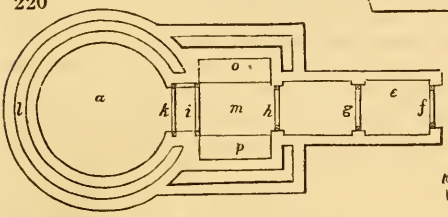

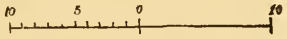

allow of making use, during the heat of summer, of the very cold water produced by the thawing of the ice, either for cooling wines or water; and in order that there may always be a considerable quantity of the water produced by the melted ice in the trap, it may be made of considerable size, so as to serve as a reservoir or well. This water would be very nearly as cold as the ice, and might be used for all the same purposes; while it would have the great advantage of being obtainable immediately, whenever it was wanted, and with very little trouble. There are five doors to this ice-house, at *f*, *g*, *h*, *i*, and *k*; and a vacuity (*l*), one foot wide, between the two walls surrounding the cellar, and covering the inner division of the passage (*m*). This passage may be fitted up with shelves, as a place for keeping vegetables and various other articles of food (raw or cooked) fresh during summer. The cone containing the ice being supposed to be under ground, the natural level of the surface is shown at *n n*; and the whole superstructure may be covered in Britain, to the depth of 2 or 3 feet with earth, planted with ivy and surrounded with trees. In warmer climates the depth of earth ought to be increased to 8 or 10 feet. The size of the well ought also to be enlarged, and there might be even a third vacuity round it. The space between the doors *i* and *k* should be filled up by a barley-straw cushion, and it would be well to have similar cushions against the doors *g* and *h*, at least during summer. The two recesses, o and *p*, are here shown only 2 ft. in depth; but, by making the walls behind them of brick, that depth may be increased at pleasure. It may also be observed, that, in situations where brick is cheaper than stone, all the walls in this design may be built hollow; and that the side walls of the ice-well need not be more than the width of a brick in thickness, the one wall being tied into the other. It may be further observed, that, if it should be inconvenient to cover the building with earth, a covering of straw or reeds, or even planting

ivy against the outside walls, and surrounding the whole with a few trees, will be equally efficient in keeping out the heat. If trees cannot be planted, on account of the soil, or of shutting out any view, a slight roof elevated on props of any sort will have the same effect. One of the most effective ice-houses that we have ever seen, was sheltered in this manner by a wire trellis, covered with Ayrshire roses, honeysuckles, clematis, and Virginian creeper. Ice-houses may be built square just as well as round; and are at less expense, as effective above the surface as under it. A square ice-house above ground, or sunk 3 ft. into it, may have treble hollow floors formed of bricks on edge, covered with foot-tiles or flagstones; and its side walls may be treble also, and built of bricks on edge. To form the roof, a 9-inch semicircular arch may be first thrown on these walls, and over this arch three vacuities built of bricks on edge and tiles: there may be five doors, as in *fig.* 220.; and the whole may be covered with a cone of earth or thatch 4 ft. thick, and clothed with giant ivy. In fact, by the use of framework, or a stratum of loose stones to keep the ice from the ground and to allow the water produced by its thawing to drain away from it, and abundance of thatch, ice may be kept above ground just as easily as potatoes. Ice-houses are, however, in the present day, of comparatively little importance, from the number of freezing machines, refrigerators, and other machines for making and keeping ice, which have been lately invented.

SECTION III.

THE SCENERY OF A COUNTRY MANSION RESIDENCE.

458. *General observations.*—Every place may be considered as producing three leading impressions on the mind of a stranger: that called forth by the entrance lodge, gates, and the portion of the approach which is seen through the latter; that which is produced by the first good view of the house, obtained from the approach road; and that which is obtained from the drawing-room windows, after entering the house. There are many houses in romantic or other extraordinary situations, to which these remarks may not be strictly applicable; but that they are so to all country houses in comparatively flat or tame countries, we think few persons of observation will doubt. In this section, therefore, we shall submit a few supplementary observations on each of these points, commencing with the entrance lodge and gates.

459. *The entrance lodge and gates.*—Good sense dictates that the architecture of the entrance lodge and gates should be in harmony with that of the house; and hence, if the dwelling-house and offices have any marked character of the Roman, Italian, Gothic, or other styles, the same ought also to be obvious in the lodge. On the other hand, if the architecture of the house and offices be mixed, or anomalous, so may be that of the lodge; or the lodge may be wholly in any one of the styles which is mixed up with the others in the mansion. That in every case the lodge ought to be in a humbler style of design than the more important buildings of the place, is sufficiently obvious from its more humble use. Independently altogether of style, care should be taken that the magnitude and seeming importance of the lodge be

not such as to raise false expectations of the magnitude and importance of the house; at the same time, no lodge whatever ought to be so small as to raise doubts in the spectator of its being a comfortable habitation for a human being. This idea ought to be borne constantly in mind, as well as those which respect style; for few things connected with an elegant country residence are more offensive to a humane mind, than to see boxes set down as lodges, not more, perhaps, than 10 ft. or 12 ft. square, with rooms not above 7 ft. high in the clear. When this is the case, and the occupant has children, he is sometimes obliged to live with half his family in a box on one side of the gate, and to send the other half to sleep in a box on the other side.

460. *Gates.*—Whether a gate ought to be of open work that may be seen through, or of close boards so as to obstruct the view, is a question that has reference chiefly to places in the immediate vicinity of towns. In all country residences, there can be no objection to the gates being of open work; and there is an advantage to the public in their being so, as it enables the passing stranger to form some idea of the place, and also tends to ornament the country. On the other hand, it seems equally clear that the gates of most small places near towns ought to be close; because one great object of every country residence is privacy, and, in a small place, without close gates, privacy is impossible. At the same time, in residences near towns, where the house forms part of a street or row, and where the entrance door is only a few yards from the road, an open gate allows the servants to see any person who may ring, either from the entrance door or the kitchen window; and thus enables them to avoid losing their time by going to open the gate for beggars and other intruders. In similar situations, it is often convenient, when there are close gates, to have a small grating, with a slide within, in order to permit the servant to speak to any person calling at the gate before opening it. A door is also sometimes made in the carriage gate, to facilitate the ingress and egress of persons without opening the entire gate. Close gates may, also, be sometimes desirable in point of effect, even where they are not required to insure privacy. Wherever there is any very striking object within the grounds, which can be seen from the entrance gate to better advantage than it can be from any other situation, then we should say that a close gate was desirable; in order that the effect of the object alluded to might not be marred to a stranger, by his seeing it imperfectly before he entered the grounds, and thus getting his first impression of it disfigured by the bars of the open gate. At Blenheim, a more striking view of the lake and bridge than is to be obtained in any other part of the grounds, bursts upon the eye of the stranger, when the close gates at Woodstock are thrown open; but if open bars were substituted for these heavy doors, the spectator would see the lake and bridge first through them, and the striking effect, which now produces a strong emotion of admiration and astonishment, would be frittered away.

461. *The style of the entrance gates* ought to be as much attended to as that of the lodge. They ought neither to be so plain as to resemble common field gates (see *fig.* 221), nor so covered with ornament as to be disproportionate to the style of the house (see *fig.* 222). Whatever style is employed in the house and lodge, the lines, forms, and ornaments of that style ought alone to be employed in the gates. In the case of houses in the Elizabethan, or in the Gothic style, this would give rise to many rich and beautiful designs;

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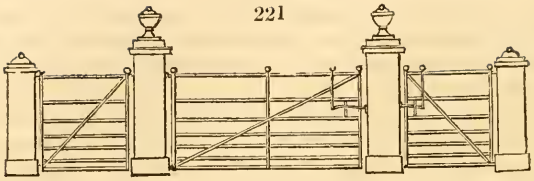

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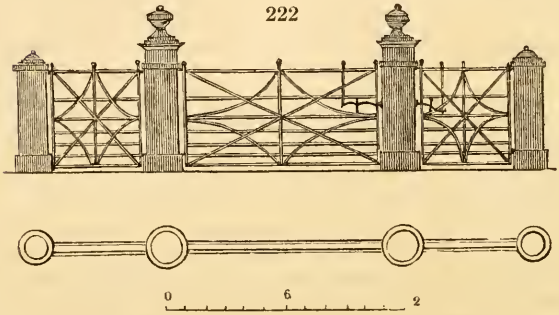

very different, indeed, from those cast and wrought iron patterns manufactured by wholesale, and set up without the slightest regard to the style of the lodge or house to which they belong; but which, from their cheapness, are now so very generally adopted by country gentlemen. The sight of these gates, at the entrance to a place, forbids all idea of taste pervading the interior of the grounds. The great point for an artist or an amateur to bear in mind is, the difference between a gate which is merely to serve as the moveable part of a fence, for the purpose of allowing persons and things to pass from one side of the fence to the other, and a gate which is to serve as a portal to a human residence. The humblest cottage, if this idea were borne in mind, would be approached through a gate superior in style of design to the gate or door into the adjoining field; while, at the same time, it would be inferior to the gate of a farm-house. We shall now give two or three designs for entrance lodges and gates, referring those of our readers who may wish to know more on the subject to our *Encyclopædia of Cottage, Farm, and Villa Architecture,* p. 997, to p. 1006.

462. *Parker's self-acting gate, fig.* 223, opens apparently by its own volition,

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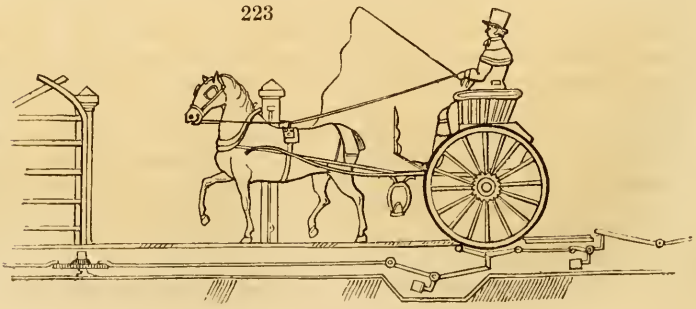

and closes again after the carriage has passed through, without any apparent cause. The effect is produced by small plates let into the ground at short distances from the gate, which when the carriage wheels roll over them descend like a weighing-machine, and act upon certain levers concealed in a trench underground. By means of these levers, a toothed wheel is made to revolve, and to turn a toothed pinion affixed to the swinging post or axle of the gate, and thus to throw it open or close it. Saul's Gate, *fig.* 224, is con-

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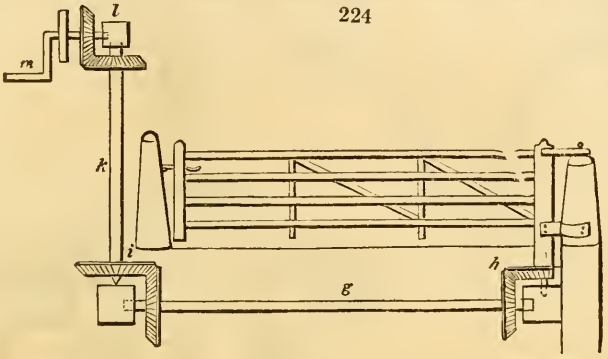

trived to enable the gate-keeper to open it without going out; and the use of it is partly to enable old and infirm people to be appointed gate-keepers, as an easy manner of providing for them; and partly to avoid the risk often incurred by children who are sent to open gates, being knocked down or injured by the horses, or the wheels of the carriages. In *fig.* 224, *g* represents a horizontal shaft placed in a tunnel made across the road directly under the gate, working at one end on the heel of the hanging post by a pinion at *h*, and the other by a bevelled pinion at *i*, on the upright shaft *k*. This shaft

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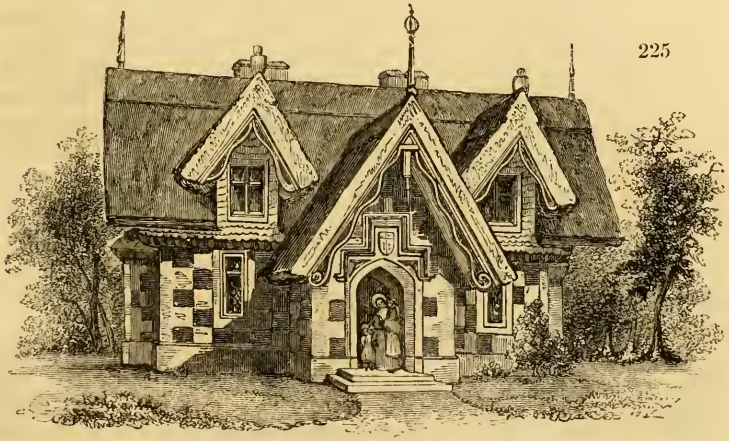

Entrance Lodge, at Chequers, Buckinghamshire.

has a pinion which works into another at *l*, on the axle of which is the winch *m*, which is placed in a convenient situation inside the entrance lodge.

463. *Entrance lodges.—Fig.* 225, is a lodge in the old English manner, designed by E. B. Lamb, Esq., and executed at Chequers, in Buckinghamshire, the seat of Sir Robert Frankland Russell, Bart. The walls are composed of stone and flints, both found on the spot, the materials being placed alternately, so as to form a chequered surface, in allusion to the name of the place. The roof is thatched with Kyanised straw.

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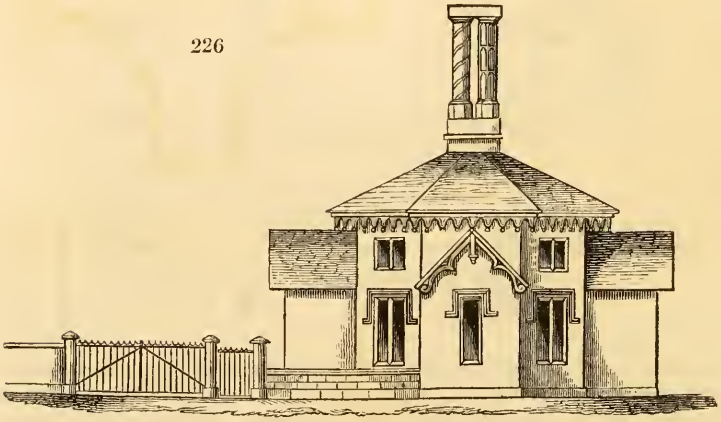

Fig. 226. is the elevation, and *fig.* 228. the plan, (both to a scale of 1-14th of an inch to a foot,) of a Gothic entrance lodge of the smallest size, by Edward Brigden, Esq., Architect, Bristol. The ground-plan consists of a living-room (*fig.* 228. *a*), with a large recess (*b*) next the road. The entrance is through the porch *c*, and *d* is intended for a scullery; *e* shows a staircase leading to an octagonal bedroom over the whole. "The most appropriate material," says Mr. Brigden, "for the walls of this cottage, would be flint or ragstone; the latter laid in random courses, and neatly tuck-pointed, has a very good effect. The dressings might be of Yorkshire stone, or any other which would harmonise with the colour of the wall. The same stone might be used for the gate piers; or, if magnesian limestone could be obtained in sufficiently large blocks, it would answer the purpose well (it being properly polished). The form of these piers may be as shown in *fig.* 227. The roof of the lodge may be covered with slate, or with stone tiles. The flues should be conveyed to the centre of the building; and the chimney stacks, which are ornamental, may be of Austin's artificial stone."

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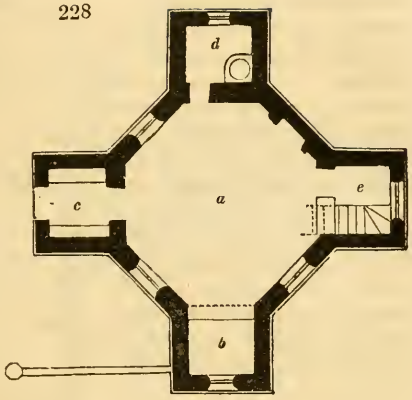
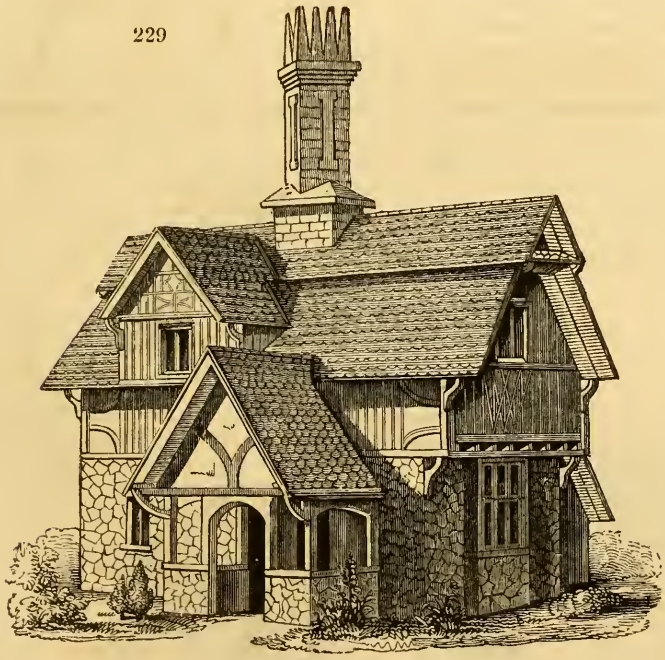
Fig. 229. is the elevation, and *fig.* 230. the ground plan, of an old English cottage, formed of wooden framing, raised on a cyclopian substructure. This cottage was designed by William Wells, Esq., and is erected on his estate at Redleaf, in Kent. The cyclopian walls are "formed of irregular blocks of sandstone, without the slightest indication of horizontal or vertical courses.

228



The effect, as contrasted with the numerous straight perpendicular lines formed by the studwork in the upper part of the walls, and with the horizontal lines of the roof, is exceedingly good. The studwork is filled in with brickwork plastered over; the smoothness and finished appearance of which, as contrasted with the rudeness of the cyclopian part, is forcible, and at the same time pleasing. A great beauty in this cottage results from the horizontal division of the upper part of the roof, which projects slightly over the lower part. The chimney top is massive and original. The whole was executed by local carpenters and masons, from the sketches of Mr.

229



Wells, out of the timber and stone produced by the estate. The plan (*fig.* 230.) shows a porch (*a*), kitchen (*b*), parlour (*c*), light closet (*d*), pantry (*e*), and a staircase (*f*) to two good bed-rooms above, and to a cellar under the parlour

below; also an open shed (*g*) for fuel: *i* is a water-closet for men, and *h* one for women and children." The oven in the kitchen is sufficiently large to admit of its being heated with faggots. The roof of the lodge is covered with pantiles; but in America, or any country where wood is cheap, it is, from its high pitch, particularly well adapted for shingles. Where stone is not plentiful, the lower part of the walls may be of brick or mud, on a foundation of masonry.

230

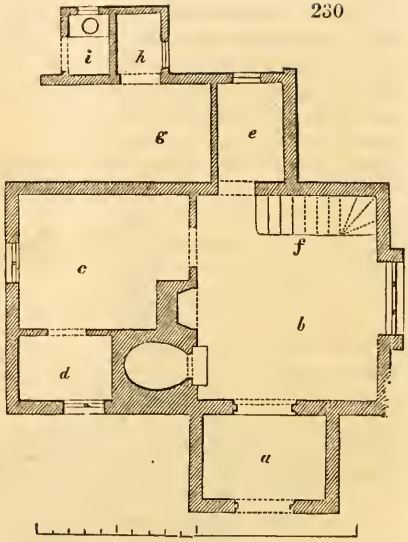
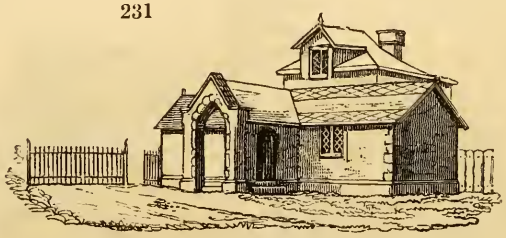


Fig. 231. is a design for a gate lodge in a simpler style, but very well adapted for its purpose.

Fig. 232. is a gate lodge in the Swiss style, which, in a hilly situation, backed by a hanging grove of larch trees, would have a powerful and characteristic effect.

The following designs, in the Italian style, are from Hunt's *Picturesque*

231



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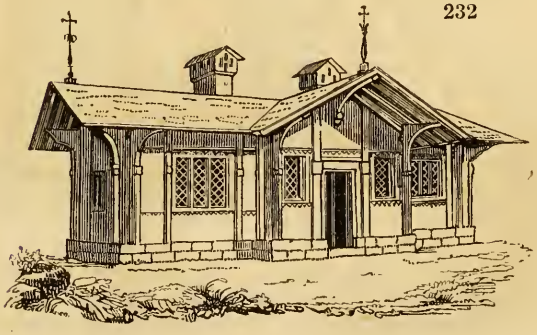
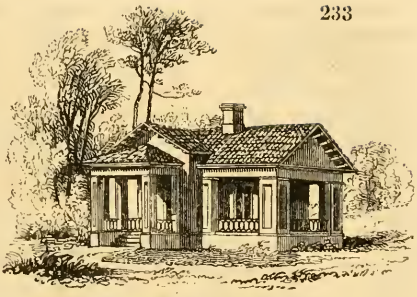


Domestic Architecture; a work which displays great taste in the elevations, but not sufficient attention to comfort and accommodation in the ground plans. These we have altered in the following figures, to supply what we thought was wanting in the originals.

233



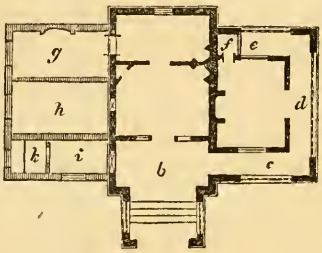


Fig. 233. shows the plan and elevation of what would form a very handsome gate lodge, and serve at the same time as a gardener's house. The porch is seen at *b; c* and *e* show an open gallery or veranda, embracing three sides of a school-room, which is entered at *d*, and adjoining which there is the closet *f*. The kitchen and back kitchen are in the centre of the house, and require no explanation; *g* and *h* are the two principal bed-rooms; *i* is an open gallery; and *k* a water-closet.

Fig. 234. is a gate lodge, the upper part of which forms a prospect tower. The gate and approach road are supposed to be on the right hand, and the sleeping-rooms to be over the arch (under which there is a seat), and in the lower tower. Such a lodge is perhaps suitable for an entrance gate on an eminence, where it may be seen from a great part of the surrounding country.

Fig. 236., p. 381, shows two entrance lodges, and the gates between, designed by the late Sir J. Wyatville for the entrance from Edensor at Chatsworth.

464. *The approach* from the lodge to the entrance front should display the features of the grounds through which it passes, to the greatest advantage; or, if there be no striking feature worth looking at between the entrance and the house, the road ought to pass through a dense wood or a grove. When it passes through open park-like scenery, trees should be sprinkled along it, in such a manner as to form a kind of running foreground, both to what is before, and to what is on each side; and Mr. Glendinning has shown, in the *Gardener's Magazine*, a mode

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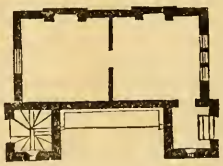
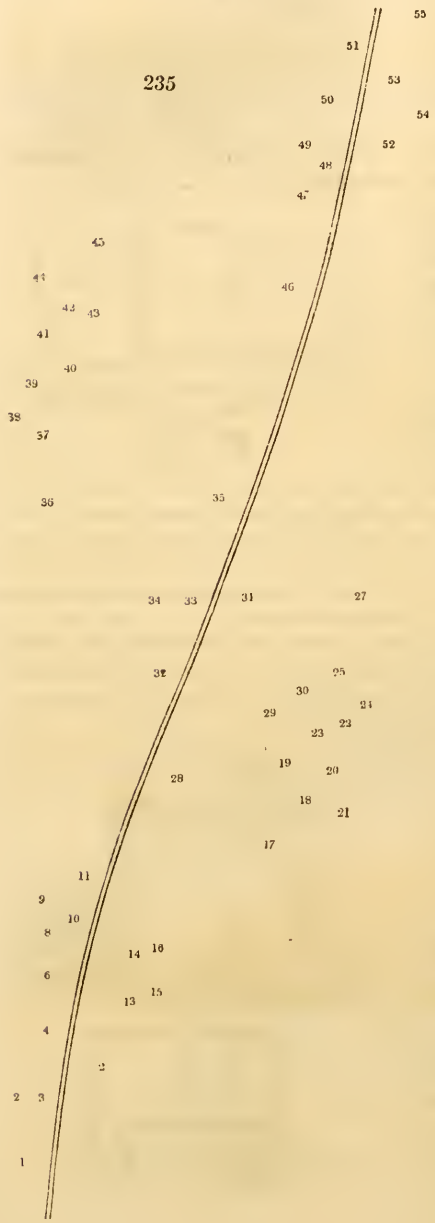
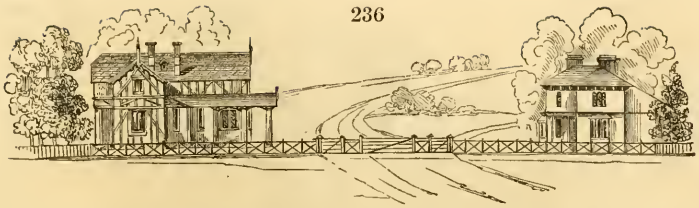


of doing this, so as to produce variety, and yet to prevent variety from degenerating into confusion, as is shown in *fig.* 235, with the list of trees annexed.



1, Liriodéndron Tulipífera.
2, T. integrifòlia.
3, T. flàva.
4, *T*ília europæ'a pubéscens.
5, e. parvifòlia.
6, e. aúrea.
7, e. álba.
8, e. rùbra.
9, e. platyphýlla.
10, e. laciniàta.
11, N*egúndo f*raxinifòlium.
12, P*àvia* flàva.
13, cárnea.
14, macrostàchya.
15, díscolor.
16, rùbra.
17, *A*'cer tatáricum.
18, *O*'pulus.
19, striàtum.
20, *p*latanòides.
21, Pseùdo-*P*látanus.
22, macrophýllum.
23, rùbrum
24, eriocárpum.
25, monspessulànum.
26, spicàtum.
27, *p*latanòides laciniàtum.
28, Kölreutè*ria* paniculàta.
29, *Ailántus* glandulòsa.
30, Gledítsch*ia* monospérma.
31, hórrida.
32, *U*'lmus rùbra péndula.
33, *F*àgus sylvática incìsa.
34, s. ferrugínea.
35, americàna purpùrea.
36, *Quércus Sùber.*
37, gramúntia.
38, *Taázin.*
39, coccínea.
40, *Æ*'gilops.
41, *Prìnus.*
42, *Cérris.*
43, *C.* exoniénsis nòva.
44, *B*allòta.
45, *Phéllos.*
46, Liquidámbar Styracíflua.
47, Castànea vésca.
48, *Plátanus* orientàlis.
49, or. cuneàta.
50, occidentàlis.
51, Salisbù*ria adiantifòlia.*
52, 53, 54, three pines of sorts.
55, *C*èdrus Libàni.

236



465. *The first view of the entrance front* should, in general, be at an oblique angle, in order that two sides of the building may be seen at once; or, at all events, that so much of two sides may be visible, as to make it evident that the building is a solid mass, and not a mere screen wall. Where the approach is a straight avenue, advancing to the entrance front at right angles with it, a view showing two sides of the house cannot be obtained; and the building must in that case depend, for the effect it produces, on the height or breadth of its elevation, and on the circumstance of its being with or without open porticoes, projecting towers, or wings. There is no fixed distance, at which it is more desirable than at any other, to see the entrance front; but there is one fixed circumstance which especially requires the attention of the artist in laying out and planting the approach. This is, that the first view of the entrance front of the house which is obtained within the grounds ought to show it as the leading feature of the landscape, and to be, in fact, the best view of the entrance front that can be anywhere obtained. Before entering the lodge gates, if the house be seen at all, it has no right to appear otherwise than as a feature among other features of the general scenery of the country; but, within the lodge, the house is the main object of attraction, to which everything else ought to be kept subordinate.

466. *In situations near the sea* it is necessary to plant a thick belt, to shelter the gardens from the effects of the sea-breeze; as on the east coast of both England and Scotland the trees are frequently cut in a sloping direction, as shown in *fig.* 237. The trees that stand best in these situations are the beech, and the pinaster, and the shrubs that bear the sea best are the privet and the tamarisk.

237

467. *The view from the drawing-room window.*—Having entered the house, and been shown into the drawing-room, the greatest impression made on the stranger ought to be by the view which he sees from its windows. This should be the most striking and the most beautiful view or prospect which the place affords. In order to be striking, it ought, if possible, to be considerably

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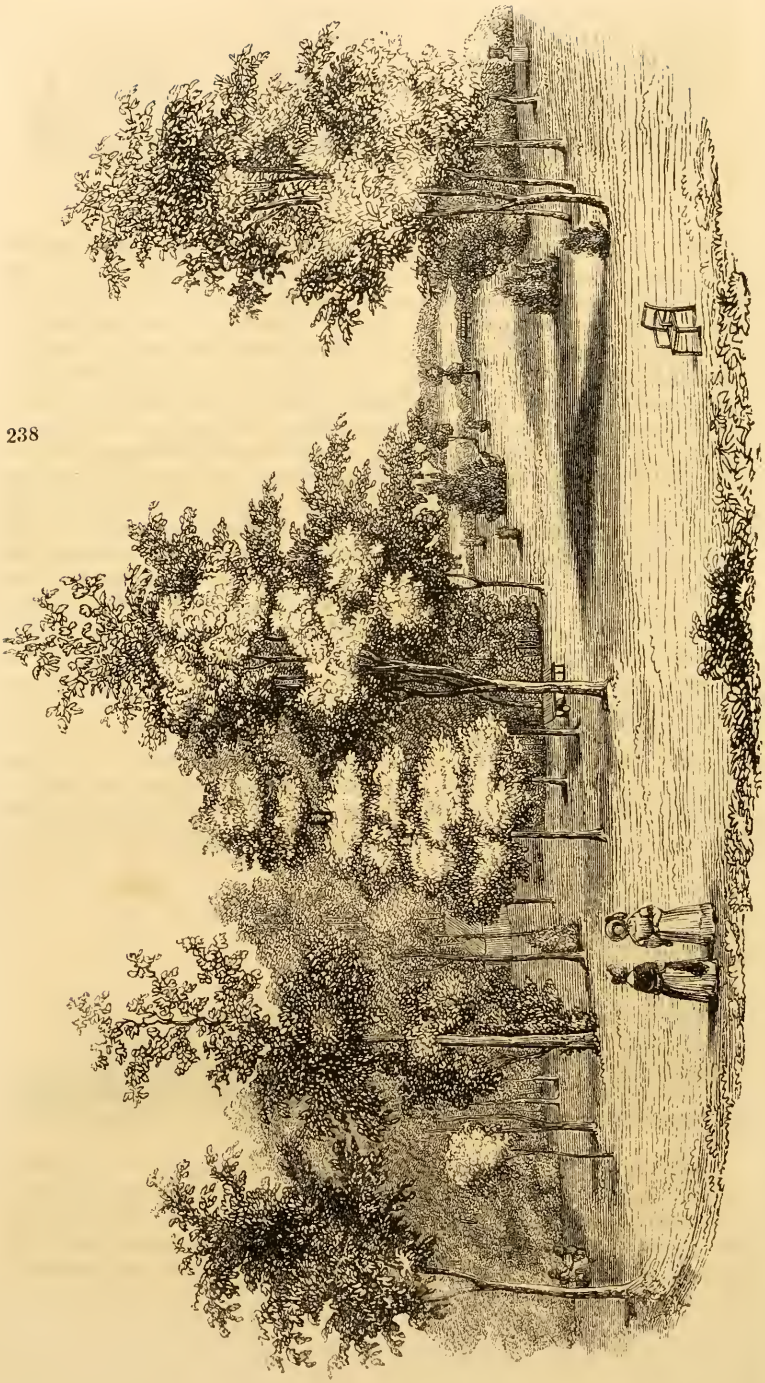

different from any views obtained between the lodge and the entrance front. The beauty which it exhibits may be of different kinds: it may be grand from the extent of prospect; bold and abrupt from the strong contrast and irregularity of its outlines; or it may be simply beautiful as a home view, from the undulations of its surface, the smoothness of its green turf, and the luxuriance of its trees, shrubs, and flowers. One of the most common modes of producing a striking view from the drawing-room windows of a house in a flat country is, by having the living-room floor of the house on a level of 10 or 12 feet above the natural surface of the ground; and by ascending to this level on the entrance front, not rapidly by a ramp or by steps, but gradually and insensibly by artificially raising the general surface, so as to give the house, on the entrance front, the appearance of standing on a natural knoll; and to prevent the stranger from suspecting that the ground on the lawn front is not on the same level as that on the entrance front. When he reaches the drawing-room, therefore, and looks down on the lawn, the effect of the scenery is greatly heightened by the commanding situation in which he finds himself so unexpectedly placed.

468. *The lawn.*—As circumstances which seldom fail of producing beauty in the view, we may mention extreme smoothness and high polish in the lawn, the branches of the trees and shrubs being allowed to recline on the ground, which shows that no cattle are introduced there; extent in every direction, but more particularly in the front, which prevents the idea occurring of confinement and limited property; irregularity in the boundary to the lawn, produced by scattered trees and bushes, creating variety and intricacy, which detain the eye and excite the imagination; and an architectural foreground, immediately below the windows of the house, which serves to connect and harmonise it with the grounds. We do not here mention the flower-garden, which is often placed on the lawn front of the house, because it may be sometimes desirable to have one in that situation and sometimes not; but the above requisites can seldom be dispensed with. One of the most common faults in the view from the drawing-room front of the house is, want of breadth in the foreground, (see *fig.* 238.) This commonly arises from too many objects being placed there; from these being too uniformly distributed over the whole; or from a clump, a walk, a pond, a tree, or some other object being placed exactly in the middle. A second fault, very commonly met with is, want of proportion between the foreground and the distance. Perhaps the foreground may be covered immediately in front of the windows with beds of flowers or of shrubs, which may occupy too large a space, or which may have grown so high as to shut out great part of the middle distance; or, in contradistinction to this, there may be no effective object in the foreground at all, when of course it will be overwhelmed by the large proportion of the view occupied by the distant scenery.

By effective object we mean the architectural appendages of the house, flower-beds, shrubs, or any other objects which rise up from the surface, and produce shade; which, as every one who has ever drawn a landscape on paper knows, is essentially necessary to a foreground; and hence, when artists have nothing in nature which they can copy into the foreground, they introduce the shadows of supposed clouds, or other objects, or human figures or animals, as in the view shown in *fig.* 239.: which view, without the horsemen and their dogs, would be nothing; while with them it is an absurdity,

239

View from the Lawn Front of Wimbledon House.

as the walk in the foreground, on which the horsemen are, is that on the lawn front of Wimbledon House, and is never used but for foot-passengers.

240

View from the Entrance Portico of Kenwood.

In *fig.* 240., which is a view from the entrance portico of the mansion at Kenwood, by E. B. Lamb, Esq., the figure is introduced with more pro-

priety; as it is in the proper walk, and does not attract too much attention from the noble oak-trees in the back ground.

A third fault, and one almost as common as the two that have been mentioned, is, want of harmony between the foreground and the distant scenery; not in point of extent, but in point of style, or of ornament. Thus we sometimes find an extensive lawn in the front of the house, which is continued in the same style of smoothness and high keeping till it terminates abruptly on a common, or in the hedgerow of a corn-field, or an extensive wood, or some other uniform surface or mass of similar or greater extent than itself. Perhaps the most common of all faults in the views from a country residence, next to want of breadth in the foreground, is, the monotony or deformity of the lines and shapes produced by hedgerows and plantations in the middle or third distance. When these faults are in the grounds of an adjoining proprietor, they of course may be considered as beyond the reach of correction; but in this case they are frequently at such a distance from the eye as to be inconspicuous, or to admit of being somewhat disguised by a few trees in the foreground. There are certain faults of this kind peculiar to every style of country. In some parts of Middlesex we have a monotony of hedges and pollard trees, with a total absence of ploughed fields. In some parts of Kent we have ploughed fields, with a total absence of pasture; and, in many parts of the lowlands of Scotland, we have the beautiful slopes of the hills cut across by stone walls, hedges, or belts of plantation, thus abruptly separating the arable plains from the hill pasture. To overcome or to mitigate difficulties of this kind, is one of the most common purposes for which a landscape-gardener is employed; and, as our friend Mr. Nesfield particularly excels in this department of his profession, we shall, with his permission, give an example which recently occurred in his practice.

Fig. 241. shows the outline of a range of distant scenery, from the drawing-room front of a suburban residence near Stafford. On the hill which forms the distance, there is a long belt or plantation, running most offensively parallel to its ridge; and swelled out in the middle, so as to form a clump-like protuberance there. This clump was made to conceal a high broken bank of rock, which was considered by the planter, or his employer, as an object that ought to be shut out; probably, because it was neither productive of grass or trees: for persons who have no idea of the enjoyments of taste, can see no beauty in anything that is not applicable to common purposes of utility. This plantation is shown surrounded by a thorn hedge, which, having been long left uncut, has attained a great height, and thereby renders the outline of the plantations as conspicuous and hard as possible. The outline at *p* indicates the slope of the hill descending from the back of the belt; and the line at *w* shows a portion of a more distant ridge, which, it is proposed, partially to plant; in order, by the contrast of the trees with the line of the unplanted ground at *p*, to render the ridge more conspicuous to the eye. By planting this distant ridge, a mass will be produced, which will appear to retire behind the belt, and thus increase the perspective effect, and raise in the imagination the idea of this plantation extending beyond the other, and even down the other side of the ridge. At *y* are high and very conspicuous thorn hedges. At *z z* are single thorn trees, which were part of some hedge-row lines that marked the outlines of former fields; which, by taking out some, and adding others, may be thrown into ornamental groups.

241

Distant Scenery near Stafford.

p, Slope of hill, descending from the back of the belt. *w*, Portion of a more distant ridge. *y y*, Thorn hedges. *z z*, Single thorn trees.

242

Same View as proposed to be altered.

a, Steep rocky bank. *b*, Patches of furze. *c*, Conical hill, rising in front of the more distant ridge *d*.

Fig. 242. shows the same view as proposed to be altered. In this view, *a* shows the steep rocky bank as it will appear when the trees are cut away; *b*, patches of furze, left for the encouragement of game, at the request of the proprietor; *c*, a conical hill rising in front of the more distant ridge *d*. As in this scene, as it actually exists, there are numerous trees of transplantable size, of thorns, horsechestnuts, limes, elms, and sycamores, all very favourably circumstanced for removal, most of the additional outstanding trees in groups, shown in *fig.* 241., may be transplanted from one part of the grounds to another, so as to produce immediate effect at comparatively little expense.

469. *The Connexion of the House with the Grounds.*—It is allowed by all authors who have written on landscape-gardening, since the days of Uvedale Price, that the want of artistical connexion between the house and the grounds is the most glaring defect in English country residences. Houses are very generally seen rising abruptly from a surface of naked gravel or turf, or partially disguised by a few trees or shrubs, accompanied perhaps on the lawn front by some flower-beds. The offices at one end of the house, and the green-house or some other projection at the other, are commonly half or entirely hidden by masses of plantation, so that nothing is seen of the main body of the edifice but the two fronts; and even these have their architectural effect often greatly injured by single trees immediately before them. The principal circumstance which has led to the want of connexion between the house and grounds in English residences is, the sudden and inconsiderate revolution introduced by the modern system of landscape-gardening; by which all the ancient terraces and mural barriers were indiscriminately swept away, in order to give place to the characteristic features of the new style, viz., the undulating surface, and apparently unlimited extent of smooth lawn, the winding approach-road, and the ha! ha! ditch, or the invisible wire railing, which separates the lawn from the park. The powerful influence of novelty rendered this arrangement satisfactory at the time; but, after a certain period had elapsed, the incongruity of so much art being found in juxta-position with what was avowedly simple nature, was felt to be absurd. Attempts were now made to connect the house with the grounds by means of trees, partly scattered round it, close up to the doors and windows, and partly in masses of close plantation. In the course of twenty years, the trees and shrubs having grown up, this also was found an unsatisfactory mode; the trees obstructing the views of the surrounding landscape from the house, and of the house from the surrounding landscape; and, besides, rendering the house gloomy and damp within. It was now felt that it was not only necessary to connect the house with the grounds, but to connect it in a harmonious manner; and, instead of bringing the two extremes of highly refined architecture and simple nature in immediate contact, by planting trees close to the house, it was thought advisable to introduce, as a medium between the trees and the architecture, certain architectural appendages, either useful or ornamental; and gradually to unite these with the woody scenery of the place. The most general appendage of this sort, and one which is applicable to the smallest houses as well as the largest, and which, in our opinion, scarcely any country house ought to be without, is a plinth round the outside wall, from which the walls of the house should appear to rise. This plinth, on the smallest and simplest scale, may be from 1 ft. to 2 ft. high, projecting from 2 in. to 4 in., and be continued round the house: beyond this there may

be a platform 6 or 8 feet wide of gravel, from 18 in. to 2 ft. higher than the surrounding surface, and bounded by a slope of turf at an angle of 45°. Opposite the entrance-door, this platform may be ascended to by three stone or brick steps, in the slope; and there may be similar steps descending to the lawn on the pleasure-ground front. In the case of houses on a larger scale, the platform may be much wider; and, instead of being laid with gravel, it may be paved with flagstones; for the slope covered with turf, a low wall may be substituted surrounded by a balustrade or other ornamental open-work. The flight of steps may also have side or spandril walls, appropriately finished and decorated. In the case of some houses, in particular situations, there may be a second terrace or platform exterior to the first, on a lower level, and considerably broader. The walk on this second platform may be of gravel, and there may be a strip of turf between it and the first platform, which may be ornamented with shrubs or flowers, or it may be without these, according to circumstances. On the outside of the gravel walk, the lawn may extend indefinitely, and may either terminate in an architectural boundary at a few yards' distance, or it may extend to an ha! ha! or to a wire fence, the situation of which is not observable from the house. In short, while the first platform is in width and character chiefly influenced by the magnitude and style of the house, the outer or lower one ought to be jointly influenced by the style of the house, and the natural character of the surface of the ground. Where the character of the surface is at all marked by bold undulations, steep slopes, or abrupt transitions, these features ought to influence the lower platform more than the character of the mansion; but, on the contrary, where the grounds are comparatively flat, then the character of the outer or lower platform should partake of that feature in the scenery which is the most conspicuous, and which of course will be the house. Platforms or terraces, therefore, may be said to form the groundwork of the appendages to a house in the country. The appendages themselves are various, as, independently of the offices, which, we contend, ought to be only partially and not wholly concealed, there are the green-houses or conservatories, architectural seats or loggias, covered or open; seats arranged so as to be covered from the rain, *fig.* 243; connecting verandas, sun-dials, vases for flowers, basins for fountains, architectural baskets, and other mural compartments for plants or flowers; and various other similar objects. In the management of these appendages, an artist, without some invention and good taste, will be greatly at a loss; and therefore the proprietor of a house already built, who wishes to harmonise it with the grounds, should consider well on whose advice he acts. A mere architect is no more competent to advise in such a case, than a mere gardener or a mere landscape-painter. It must be a person who has directed particular attention to the subject, and who unites the knowledge of the architect, as far at least as the exterior of the buildings is concerned, with that knowledge of composition of general scenery which is necessarily possessed by the landscape-painter, and a considerable share of that knowledge of cultivation which is essential to the gardener.

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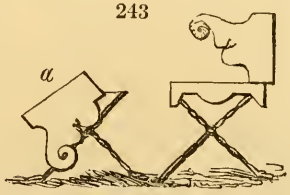
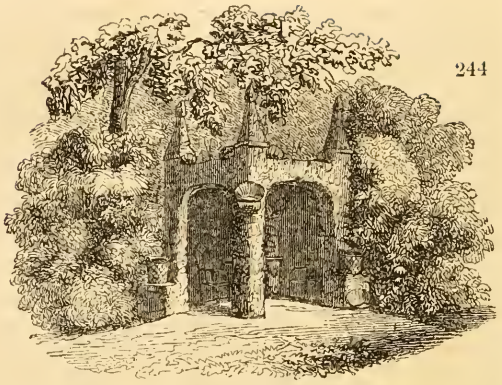


470. *Grottos and Moss-houses* are very agreeable additions to pleasure-ground scenery in a large place; but they require to be managed with skill to produce a good effect. When it is practicable a preparation should be made for a grotto by pssing through rocky scenery, and gradually descending, till the path becomes a mere passage between rocks, and these rocks appear to form themselves into the entrance to the grotto. As this plan, however, is not only very expensive, but requires considerable space, in most cases it is judged sufficient to have merely a kind of summer-house, like that shown in *fig.* 244., to mark the entrance; or an outway as shown in *fig.* 245. to lead to it.



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245

471. Moss-houses are built with a framework of wood, as shown in *fig.* 246., which is the ground plan of a moss-house, designed and executed by Mr. Toward, in the flower-garden of Her Royal Highness the Duchess of Gloucester, at Bagshot-park. The form is an irregular heptagon (*fig.* 247.), with a Gothic portico in front, supported on rustic pillars. The ceiling of the portico is inlaid with moss of various colours, representing a star and diamonds, as shown in *fig.* 248., with a cornice of pinaster cones. The floor under the portico is a copy of the ceiling in different coloured elliptical-shaped stones of a small size. On each side of the doorway are panels formed in the rustic style with different coloured woods. The entrance into the house is Gothic; opposite to which are two Gothic windows, with stained glass of various colours; under these are four square panels, with a large diamond in the centre of each, all formed with moss. Along the sides, between the doorway and the windows, are seats (*fig.* 246, *a*) made of stained cherry-tree: above these is a skirting of rustic wood 18 in. deep (see *l* in *fig.* 249.), the surbase of which projects about three-eighths of an inch beyond the

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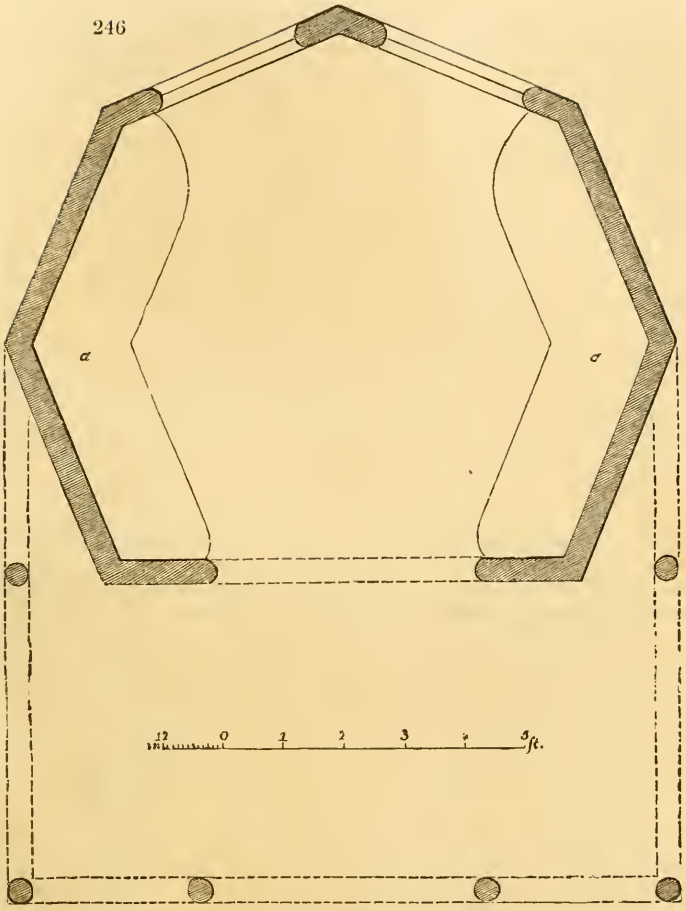
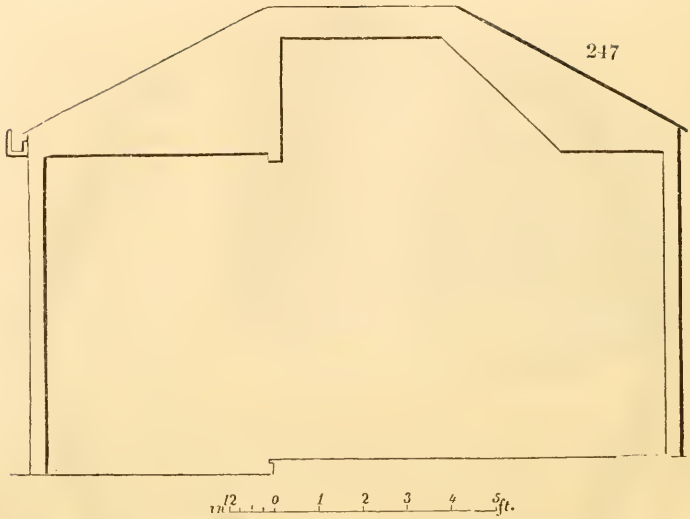


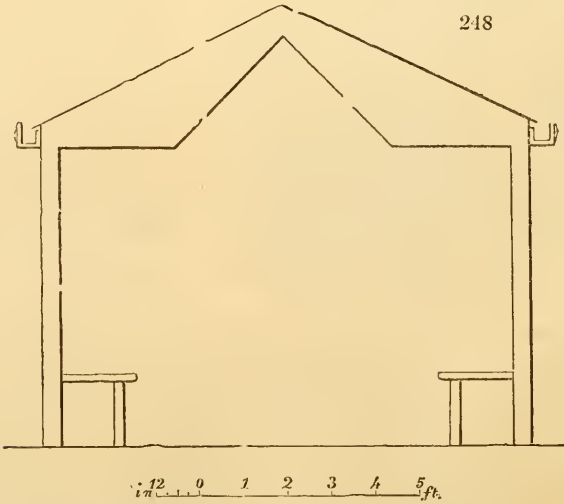
Ground plan of the moss-house and portico: *a a*, the seats.

moss, to prevent the back from brushing against it. Each side above the skirting is divided into four square panels (see *fig.* 249.), and these into a succession of squares (*k*). On the right and left of the Gothic entrance is an oblong panel, with between twenty and thirty of the most common species of moss arranged in horizontal stripes. In the spangles over the doorway, are upwards of sixty species of moss and lichens, such as are too diminutive in growth to be incorporated into the body of the work. The whole of the above have been collected in and about this neighbourhood. Over the seats and windows are three horizontal pieces, on a level with the ceiling of the portico, with various devices. (*fig.* 250. c, D, and E.) These pieces serve as a kind of plancier to the inner roof, which is a common span, with a gable end over the entrance, on which is represented the elevation of the building.



Section of the moss-house from front to back, showing the interior and exterior roofs.

The opposite end is hipped in, and has the figure of the English crown. The whole of this design is executed in party-coloured moss. The ceiling of the



Section of the moss-house from right to left, showing the seats and the inner and the outer roof, with gutters, &c.

span part of the roof is inlaid with light-coloured mosses, in the form of diamonds.

All the styles, rails, and munnions of the panels are formed with Cenómyce

rangiferìna (or reindeer lichen), which grows in great abundance on Bagshot Heath. The ridge of the outer roof is about 4 ft. in length, with six hips and projecting eaves; the plancier is of rough bark, and the fascia of pinaster cones, within which is a gutter to carry the water to the back part of the building.

It may be remarked, that, had the whole structure been one foot higher, it would have appeared to much greater advantage: the walls are barely 7 ft., and they ought to have been nearly 8 ft. in height.

Fig. 251. is an elevation of the moss-house, showing the situation of the window, the seats, the outer cornice of pine cones, floor of the portico, &c., mentioned above.

Fig. 246. shows the ground plan of the moss-house and portico; *a a* are the seats.

Fig. 247. is a section of the moss-house from front to back, showing the interior and exterior roofs.

Fig. 248. is a section of the moss-house from right to left, showing the seats, and the inner and the outer roof, with gutters, &c.

Fig. 249. is a sketch of one of the sides. In this figure, *k* shows the disposition of the rods before the moss is introduced between them; o is Cenómyce rangiferìna; *p*, *Hýpnum Schréberi*; *q* is Dícranum glaúcum; *r*, *Brỳum hórnum*; *s*, *S* phágnum acutifòlium, pink var.; *t*, *S*, obtusifòlium; and *u*, *Brỳum cuspidàtum*. *l* is the rustic skirting above the seat; *m*, the seat; and *n*, the rustic-work under the seat.

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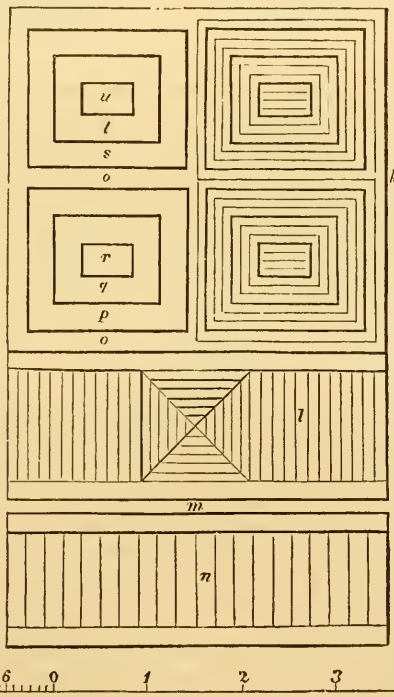
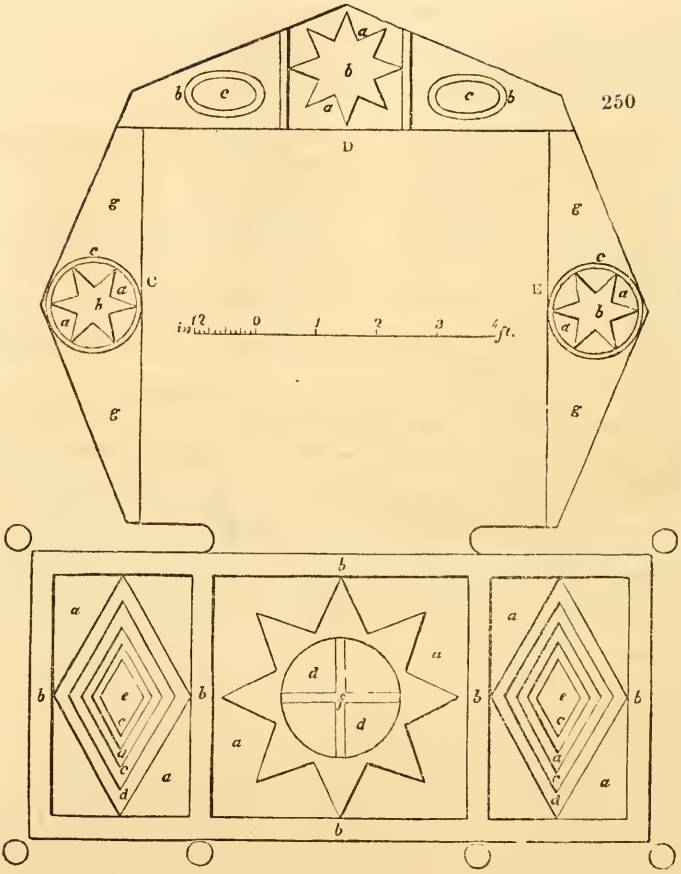


Fig. 250. is a plan of the ceiling to the portico, and of the horizontal part of the ceiling of the interior. In this figure, c d and e are the horizontal panels in the ceiling of the interior, over the seats. The patterns in these panels are formed by round rods, as above described, between which are introduced the following kinds of moss:—*a*, *Brỳum hórnum*; *b*, Cenòmyce rangiferìna; *c*, *Sphágnum acutifòlium*, pink var.; *d*, *Sphágnum obtusifòlium*; *e*, Dícranum glaúcum;



f, *Brỳum* cuspidàtum; *g*, *Hýpnum* squarròsum; *h*, Dìcranum *scopàrium*. The same letters refer to the ceiling of the portico.

The following is the method in which the work is performed. The first thing necessary, before commencing operations, is to have an even close-boarded surface to work upon; and upon this ground draw whatever figures, forms, or devices you intend to represent. The next thing is to get round rods, about half an inch or five-eighths of an inch in diameter, nearly of equal size, and well seasoned. These rods are to be nailed on agreeably to the drawing, about an inch from centre to centre, this being the average space, though it is necessary to regulate the distance, in some measure, according to the space allotted for each sort of moss. Each species should be collected separately, when perfectly dry. It must be adjusted by placing the top of each piece as evenly as possible, and cutting off a part of the root end, if it should be found too long. Take a small quantity at a time, and ram it in between the rods with a blunt wedge-shaped piece of wood. The

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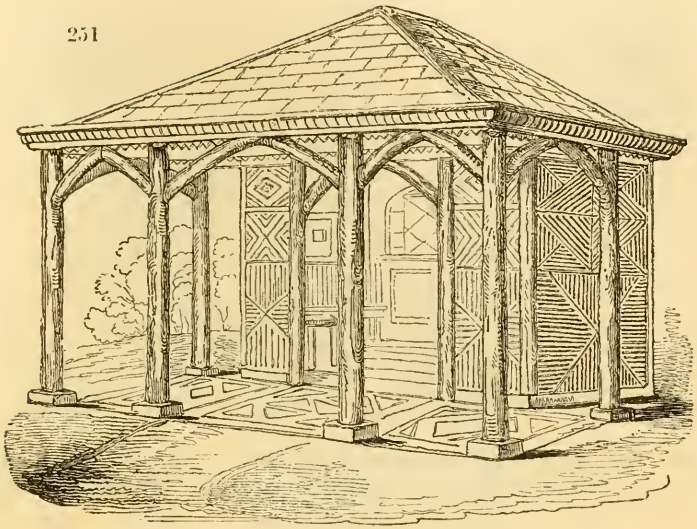

rods act as a dovetail; and, if the moss be properly rammed in, it cannot be pulled out again without tearing it to pieces. The bottom part being compressed between the rods, the top expands, and so completely covers the rods that not a vestige of them is to be seen in the whole building. Its evenness of surface, closeness of texture, and variety of colour, give moss thus arranged an appearance not unlike that of a Turkey carpet. The most common species of moss adapted for the purpose are, Cenómyce rangiferína, the pure white of which contrasts well with that of most of the other sorts; Dícranum glaúcum, whitish green, and *Bryum hórnum*, yellowish green, these are two of the best, and quite distinct in colour; *Sphágnum* acutifòlium, the pink variety, and *S.* obtusifòlium, yellowish white, form a striking contrast with the greater part of the others; *Bryum ròseum*, pink, *B.* cuspidàtum, light green, Dícranum *scopàrium*, deep green, *Hypnum* Schréberi, reddish, *H.* squarròsum, bright green, are all good; and *H.* lòreum, bright green, *H.* tríquetrum, yellow-green, *H.* (Léskea) dendròides, yellowish green, and some others, serve to make a variety.

Fig. 252. shows another mode of arranging the side panels, without moss, and solely placing hazel rods. *Fig.* 253. shows the ground plan of a rustic summer-house, which may be built either with or without moss; the elevation of which is shown in *fig.* 254. The ground plan of this rustic structure has nine equal sides, with a portico all round, supported on nine pillars, each of a young fir-tree, 1 ft. in diameter, with capitals 1 ft. 2 in. square, formed of square boards 4 in. thick. On these caps rest four courses of rustic planks, with the bark on each, 6 in. thick, and perfectly horizontal, which connect the whole of the columns, and support the rafters of the projecting roof, which may be formed of heath or reeds, or of larch, birch, or oak bark. The floor on which the columns are placed is raised on a base 1 ft. high, and surrounded by a gravel walk. The position and form of the seat, which is made

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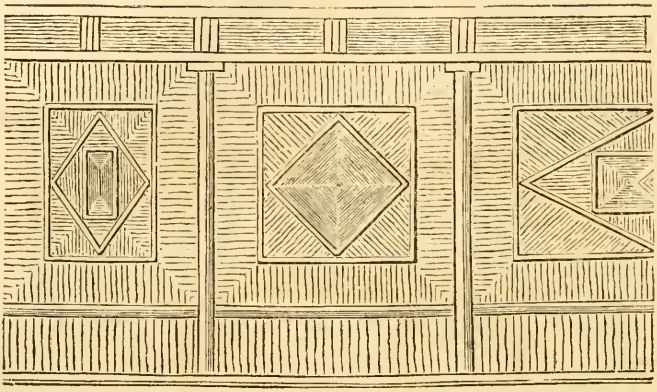

of well-seasoned wood, are shown at *a* in *fig.* 253. The floor of the cell may be laid with flints, pebbles, bricks of different colours, or with broken bottles,

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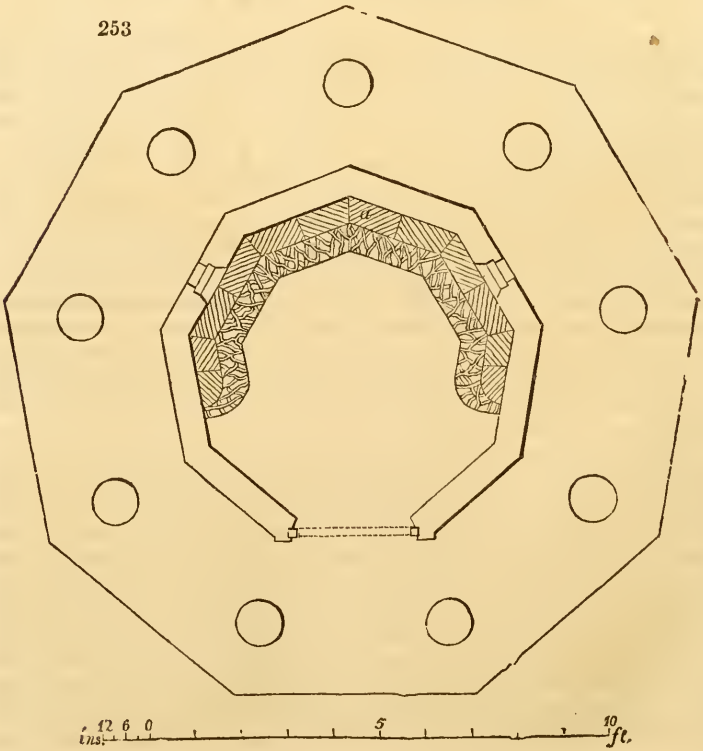

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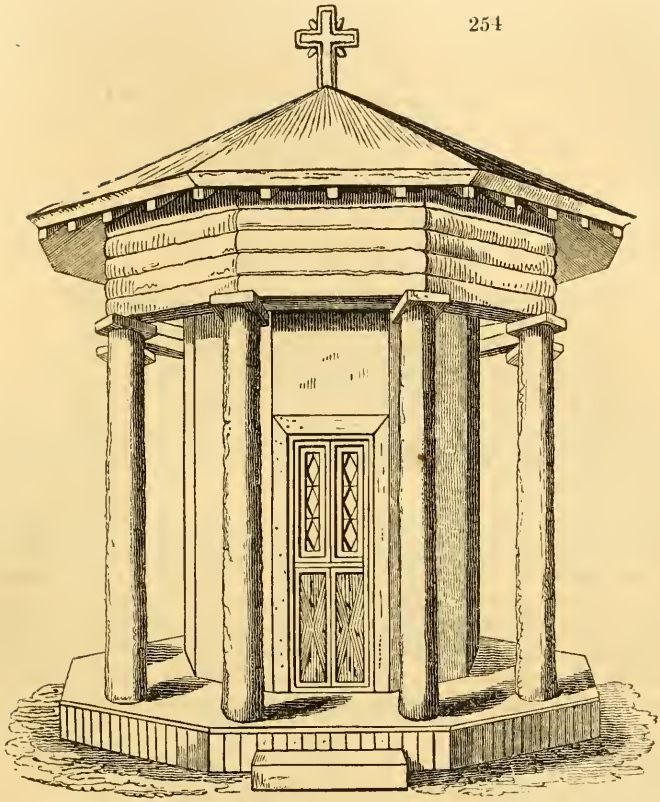

with their bottoms upwards, and filled-in with Roman cement and sea-shells. The floor of the portico may be paved in any fanciful manner, with bricks, or with small stones of various colours, from the nearest convenient locality, or from the sea-beach. The rafters are 4 in. broad, and 5 in. deep; and, to secure them from wet, they may be first covered with a layer of slates, and above that with a coat of heath or of reeds, 9 in. thick. If heath or reeds cannot be conveniently procured, chips of wood, or of birch or hazel spray, may be used; and covered, or not, according to the taste of the party, with plates of larch, birch, or oak bark, laid in the manner of slates, with the outer surface upwards. If bark is not used as an outer covering, the materials may be Kyanised. The wall of the cell is 9 in. thick, and consists of nine upright posts, on the inside of which are nailed horizontally (the upper edge standing out about 1 in. from the post) fillets of wood $\frac{3}{4}$ in. square, and 1 in. apart. In the interstices between the strips, moss is rammed in with a wedge-shaped piece of wood. The ceiling is formed in the same manner, except that in the centre there is a polygonal star, formed by moss of a different colour. On the supposition that the general surface is clothed by the common ground moss, the star may be formed of the same moss, dyed by steeping it in a

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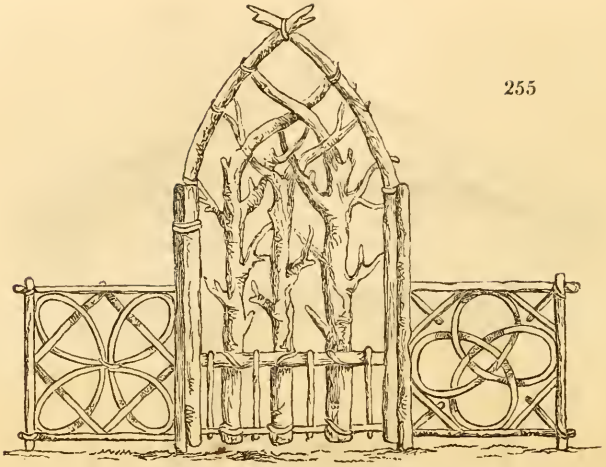

decoction of logwood; or of the white moss found on trees. The cornice in the inside is made of the cones of the common Scotch pine, or of the pinaster; three rows being laid horizontally, and one row projecting a little outward. The door is made of rustic work, and has the two upper panels filled in with latticework and stained glass, as are the two other windows in the side walls, shown in the plan. The seat is formed of different kinds of wood with the bark taken off, as shown in the plan. The best kinds of wood to use for the columns, and the horizontal planks over them which form the frieze, are

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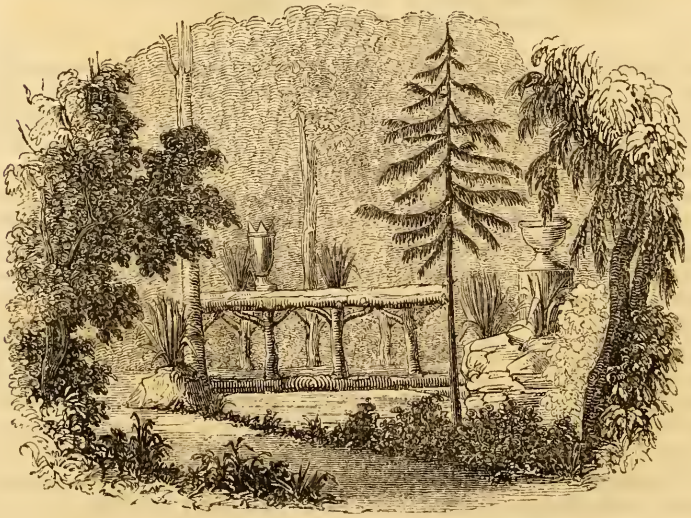

spruce, fir, and larch; because these retain their bark a longer time without its decaying, than any other common British wood. If these kinds cannot be procured, then it is better to remove the bark. Structures of this kind are not uncommon in pleasure-grounds: that now described was erected, some years ago, at Murtle, in Aberdeenshire, by Mr. James Alexander, then gardener there. The cost is chiefly labour, the whole timber and other materials not exceeding in value 5*l*. For other moss-houses, see *figs.* 123. and 124., in p. 214 and p. 215.

472. *Rustic Work* may often be introduced with very good effect in park scenery. A rustic gate and railing (see *fig.* 255), may be used to form a

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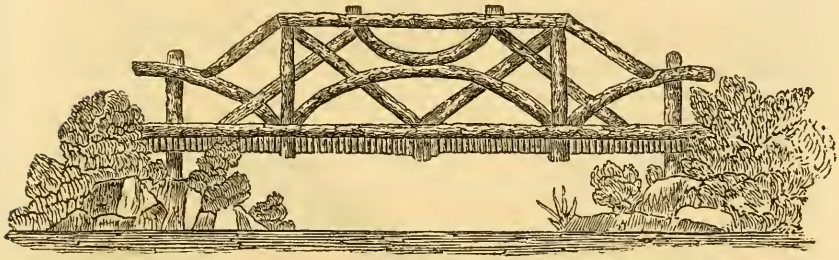

boundary between the park and the pleasure-grounds; and a rustic bridge (*fig.* 257), somewhat decorated, may form the connecting link between the

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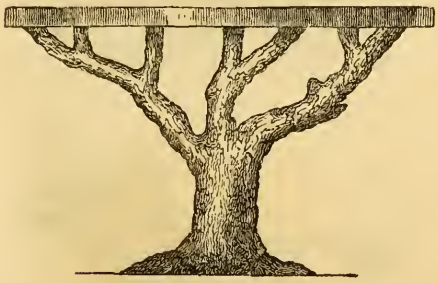

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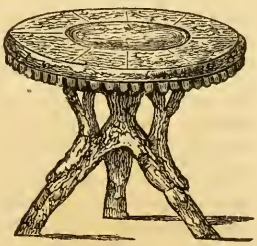

dressed ground and the wild scenery. A bridge of this kind, which is of very simple construction, though very ornamental, has the advantage of being very easily constructed, by any village carpenter, of materials which are found in abundance in every large park. A rustic table may be formed by cutting off the head of a tree, and fixing the trunk in the ground (unless the tree were low enough for it to be left growing), with a

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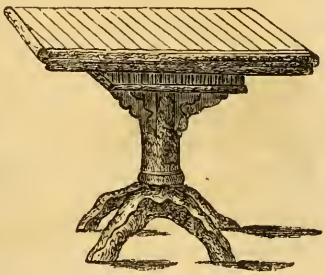

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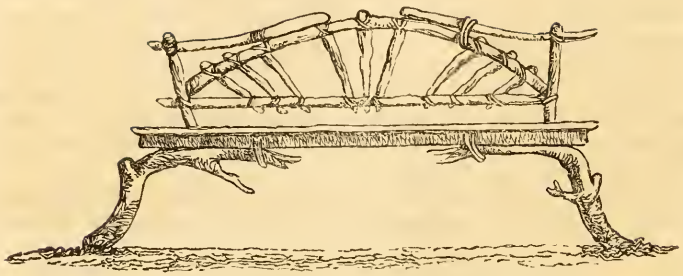

round piece of wood for the table, as shown in *fig.* 258; or by fixing a number of hazel rods together, as shown in *figs.* 259. and 260. Rustic seats may be made either of rough branches, nailed or tied together, as shown in *fig.* 261.; or with a thatched roof, as shown in *fig.* 262.; or of hazel rods, neatly fastened together, and formed into an elegantly shaped chair (see *fig.* 263.). Rustic stools may be made as shown in *fig.* 264.; and rustic flower-stands as shown in *fig.* 265.

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473. *Fountains* are universally acknowledged to be great ornaments to gardens; chiefly perhaps from the appearance of life and motion which they communicate to the surrounding scenery. Many persons are deterred from indulging in *jets-d'eau*, or in some other description of fountain, from an idea that they cannot

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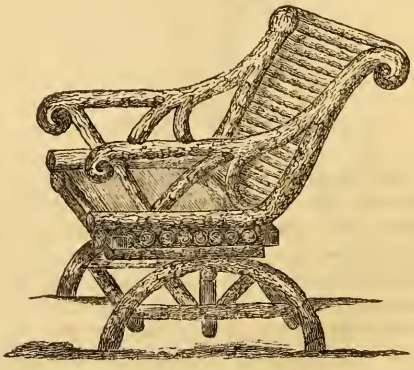

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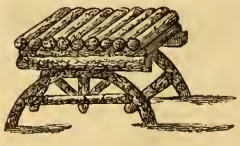

be obtained without great expense, and without an immense supply of water; but the height to which a jet will rise does not depend on the quantity of

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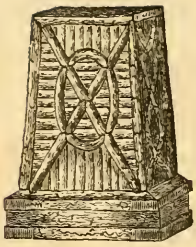

water in the reservoir, but on its height above the surface from which the jet rises; and, when it is considered that no fountain need be allowed to act in the night-time, or even in the day at certain seasons of the year, the quantity of water that will require to be raised to the reservoir is much less than at first sight will appear necessary. The greater number of fountains in suburban gardens are indeed only played off when visitors are present; and this can be effected with a very moderate-sized reservoir, and with no more use of the forcing-pump than may be necessary to fill up the leisure time of a house servant, or a gardener's labourer. Though no person will undertake to erect a fountain without employing an engineer, or a plumber who possesses skill and experience in this branch of hydraulics; yet it may be useful to state a few particulars, with a view of enabling the proprietor of a suburban residence to judge how far a fountain may be practicable in his case; and to form some notion as to whether the person whom he intends employing to erect it, has a competent knowledge of the subject. Wherever a fountain is forced, the jet may be made to rise nearly as high as the reservoir. If the reservoir be 5 ft. 1 in. above the level of the surface from which the *jet-d'eau* is to ascend, the jet will rise 5 ft. If the reservoir should be 10 ft. 4 in. high, then the jet will rise 10 ft.; and if it be 51 ft. 9 in. high, it will rise 45 ft. In order to procure a jet of 100 ft. in height, it is necessary that the reservoir be 133 ft. 4 in. high. Now the jets will rise at this rate relatively to the reservoir, whether the latter contains only one cubic yard of water, or 10,000 cubic yards; all the difference being, that in the former case the jet would not last longer than a minute or two, because the cubic yard of water would be immediately exhausted, while in the latter it would last several days. The next point which a person about to erect a fountain would desire to know is, the diameter of the pipe which is to convey the water from the reservoir to the jet. Now this diameter may be as large or as small as the party chooses: it may be a foot in diameter, or it may be only an inch; but, whatever its diameter may be, this condition is essentially necessary, viz., that the orifice from which the jet issues shall be small as compared with the diameter of the supply pipe, in proportion as the jet is to rise high. If the jet is to rise to a maximum of height, that is, as nearly as the nature of things will admit, to the height of the reservoir, then the orifice must not exceed a fourth part in diameter of the orifice of the conducting pipe. If, instead of a fourth part, the orifice were made of the entire width of the conducting pipe, the water would hardly rise above the surface; and this, which is very remarkable, would be the case, whether the reservoir were 10 ft. or 100 ft. high. Thus, when the reservoir is 10 ft. 4 in. high, the height to which it is wished to have the jet to rise is 10 ft., and the diameter of the pipe which conveys the water to it from the reservoir is $2\frac{1}{4}$ in., then the diameter of the orifice must not be larger than $\frac{1}{2}$ in. The following Tables contain useful data on this subject. The first is taken from Switzer's *Introduction to a General System of Hydrostatics*, &c., vol. ii., p. 126.; and the second from the excellent article on Hydraulics in the *Encyclopædia Britannica*, seventh edition, already referred to.

Height of the Reservoir.		Diameter of the Pipes.		Thickness of the Metal.		Diameters of the Orifices.		Height the Water will rise to.	
Feet	Inches.	Inches.	Lines.	Lines.		Lines.	Parts.	Feet.	Inches.
100	0	7	0	15½	16	12	15	80	0
86	4	6	0	14	0	12	14	70	0
72	0	5½	0	12	13	10	12	60	0
58	4	5	0	9	9	8	10	50	0
45	4	4½	0	7½	8	7	8	40	0
33	0	3	0	6½	7	7	0	30	0
21	4	2½	0	5½	6	6½	0	20	0
15	9	2¼	0	4	5	6	0	15	0
10	4	0	25	3½	4	5	0	10	0
5	1	0	22	3	3½	4	0	5	0

Altitude of the Jet.	Altitude of the Reservoir.		Quantity of Water discharged in a minute from an Adjutage or Orifice six Lines in diam.	Diameters of the horizontal Tubes suited to the two preceding Columns.	Thickness required for the Metal of the Pipes in Lead.
Feet.	Feet.	Inches.	Quarts.	Lines.	Lines.
5	5	1	32	21	1½
10	10	4	45	26	1¾
15	15	9	56	28	2
20	21	4	65	31	2¼
30	33	0	81	34	3
50	58	4	108	39	4
70	86	4	131	43	5
100	133	4	163	49	6

474. *The pipes that convey the water* from the reservoir to the jet should be laid, as nearly as possible, in a straight direction; and that part which is under ground should be sufficiently deep to be out of the reach of frost, and of one uniform slope from the reservoir to the jet. In proportion as the direction of the supply pipe is circuitous, and the level irregular, will the friction of the water be increased when in motion, and consequently the power of the jet diminished. There are two other evils which result from not laying the pipes on a uniform slope: viz., that air will collect in all the higher parts of the pipe, and mud in all the lower parts; so that, for each deviation, upwards from the uniform slope, it is essentially necessary to have a small pipe with a cock to permit the escape of the air from time to time; and in the lowest part of every deviation from the uniform slope downwards, a pipe is also necessary with a cock to admit of occasionally, say once a year, washing out the mud. Few persons are aware how very soon air collects in water pipes; or how much sediment is deposited by even the purest water; which sediment is generally difficult to remove, in proportion to its fineness. We have known fountains that in a very few months after they were put up have ceased to act, owing solely to the accumulation of air in their pipes; and in other places, where old fountains, after having played for many years, have ceased to act, the cause is to be found in the accumulation of air and sediment. Much more

might be said on this subject, as a matter of science, but we trust enough has been advanced to show the necessity of employing a competent person, whenever it is desired to erect a fountain.

475. *Fountains, as matters of taste*, like every other object by which the fancy is called into exercise, admit of a great variety of designs. Our guide

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in the choice of these must be principally the character of the scenery in which the fountain is to be placed. In a Dutch, French, or other architectural garden, we see no objection to figures of animals spouting water (see *figs.* 266., 267), to that of a nymph wringing her robe (*fig.* 269.), or her hair (*fig.* 270.); or to Caus's very elegant design (*fig.* 271.). In an English garden, however, where the scenery around is not so decidedly artificial, a simple jet from a rock, or a group of shells, as in the wood at White Knights (see *fig.* 272.); or from the centre of a basin, as at St. Cloud (*fig.* 273.); or in the design by W. Mason, Esq. (*fig.* 271.). In this last design, the tube from which the jet issues is to

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be considered as proceeding from a mass of rock, just seen above the water. *Fig.* 274. is a view of a piece of rock and shell-work, with fountains, which may suit a grotto; *fig.* 275. represents a globe; and *figs.* 276. and 277. are fountains combined with rock-work. These kinds of fountain and their accompaniments have no pretensions to be considered as artistical; but we have given the designs, as they may suit various situations where economy is an object, and where an amateur would find pleasure in erecting a fountain for himself, with only the assistance of his gardener. There are various kinds of architectural fountains which are, also, from their simplicity, suitable for pleasure-ground scenery in the modern style; such as candelabra, tripods, columns, vases, &c. Sometimes, also, instead of a jet, the character of the scene in which the fountain is to be placed may render a drooping, or cascade, fountain more appropriate; for, by this description of fountain, grandeur of effect can be produced with a much smaller quantity of water, and with much less height of reservoir, than in the case of upright jets. Most of the artificial-stone manufacturers and plumbers have a great variety of designs for fountains; and the hydraulic ram may be obtained from Messrs. Bramah, Piccadilly, or a common forcing-pump may be used.

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476. *Flower-gardens* differ from those beds of flowers which are often scattered on the lawn, in front of a house (so as to constitute a foreground to the distant scenery), by forming a whole of themselves. For this purpose, a flower-garden is, or should be, always surrounded by some sort of boundary, or inclosure, to separate it from the general scenery of the place to which it belongs. This boundary may be variously formed: it may be a border of shrubs; a fence of trelliswork, either as an espalier or as an arcade; a conservative wall; a walk covered with trelliswork; a clipped hedge of some kind of evergreen, or an unclipped hedge of various shrubs. Whatever kind of boundary is adopted, it is essentially necessary that it should not be so high as to exclude the sun from the area of the garden, or to prevent the free circulation of air round the plants. What the suitable height of the boundary fence may be, to insure the admission of sun and air, depends on the extent of the garden, the elevation or depression of its surface, and its aspect; and, if it be of any other form than a circle or a square, whether its longest diameter

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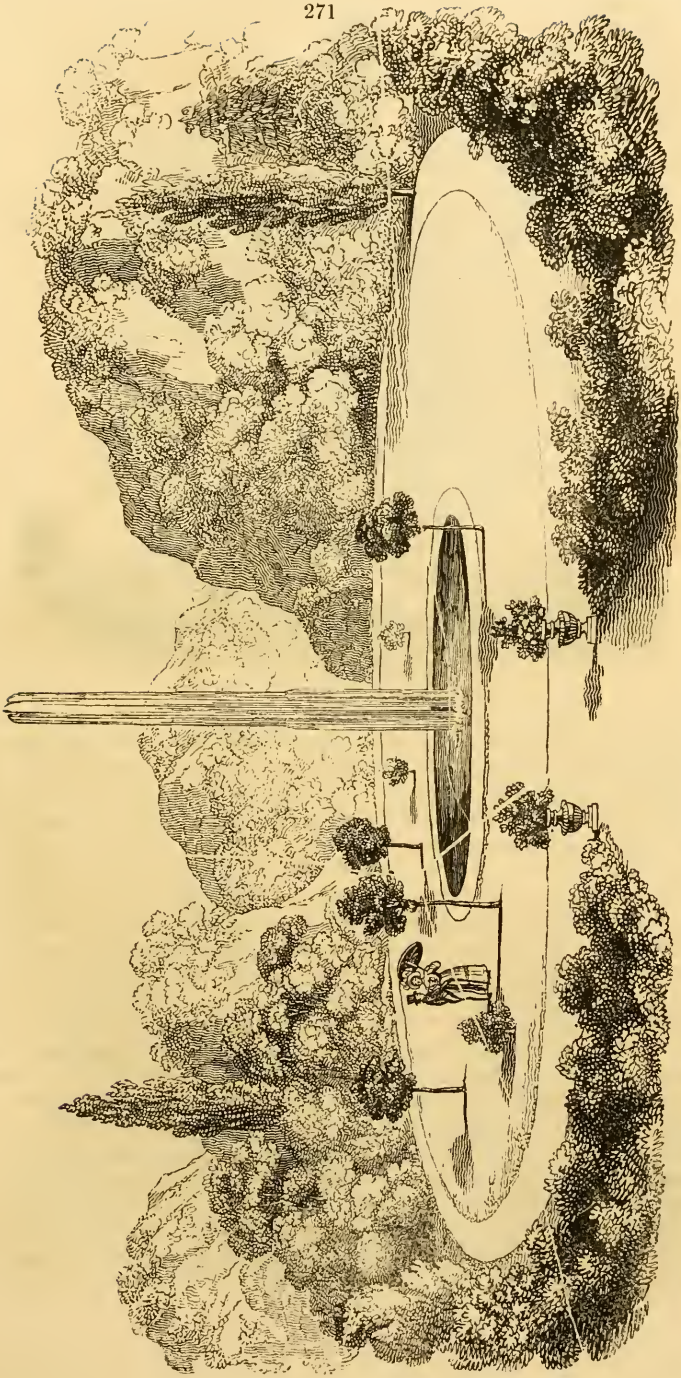

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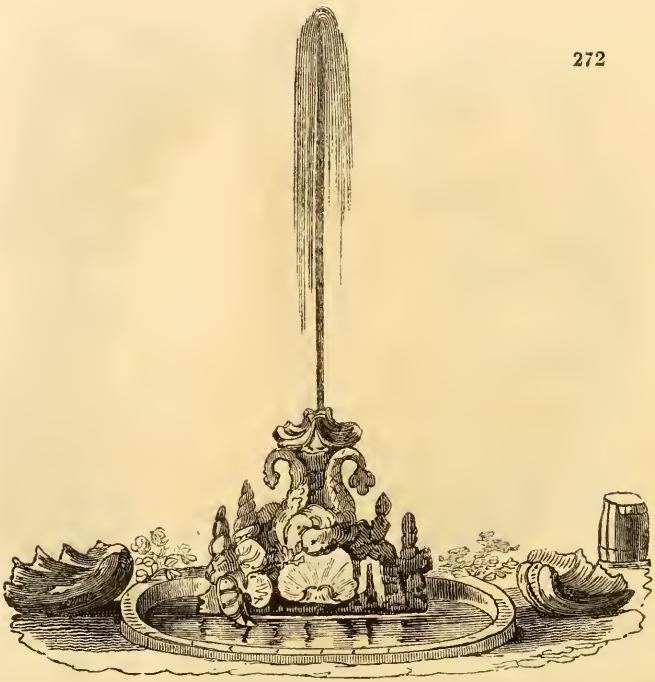

is in the direction of east and west, or of north and south. A case can hardly occur in which a flower-garden should be surrounded by trees: though, in very exposed places, these may be introduced on the north, north-east, and north-west sides; but this should be at the distance of at least three times their height from the boundary fence of the garden. Nothing contributes more to the beauty of flowers than abundance of solar light, and the free circulation round them of air. Even if trees are planted only on the north side, but so near as to exclude the free action of reflected light from that side, the flowers will be weak and drawn towards the sun. All near fences have a tendency to produce this kind of etiolation, as any one may observe in the case of plants growing on the south-side of a common hedge; and this etiolation is directly the reverse of that bushy, tufted, or spreading appearance, which always accompanies vigorous growth in open airy situations. The outline of the flower-garden should always be such, as that on the first view of the interior some general form may be recognised in the area; for example, it may approach to a circle, to a broad or narrow oval, to a square, to a parallelogram, or to a triangle. A long narrow strip, either crooked or straight, would not be satisfactory to the eye; nor would a space, broad in some places and narrow in others, here straight and there crooked, afford the spectator half so great a degree of satisfaction, as he would experience if he recognised some known and definite figure. Whether the boundary line be regular or irregular is a matter of no consequence, with reference to this end;

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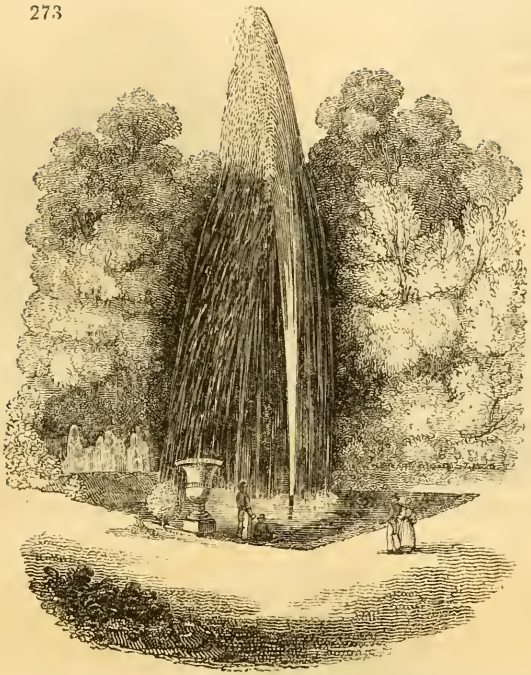

provided there be ample length and breadth included by the outline, to throw the interior into some definite shape, when seen in perspective.

477. *In some cases a number of flower-gardens,* &c., are thrown together, as in the pleasure-grounds at Bagshot Park, as shown in *fig.* 278.; the pleasure-grounds are entered by a close rustic gate at *a*, through the arbour trellis

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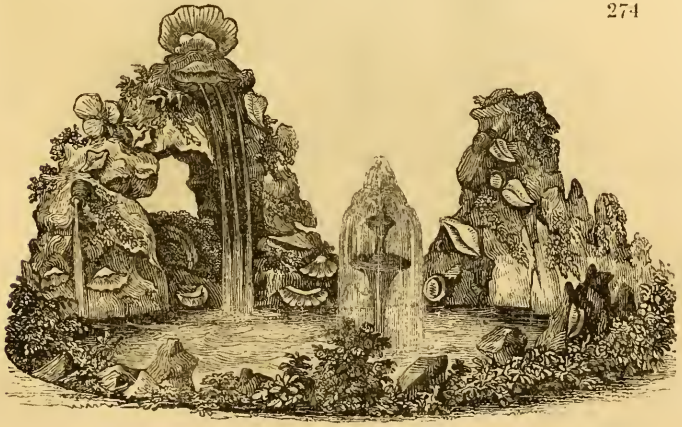

walk *b*, which leads to the rosery at *c*, consisting of groups of dwarf roses in mosses or turf. A garden of showy herbaceous plants, in beds edged with box, on gravel, is shown at *d*. There is a collection of standard rose-trees at *e*, the trees being planted singly on turf, and intersected by a gravel walk, which leads to the American ground *f*, planted with the choicest rhododendrons and azaleas. An exotic flower-garden is shown at *g*, consisting entirely of pelargoniums, fuschias salvias, verbenas, and other half-hardy, or green-house plants, in beds, or in baskets of wirework, on turf, disposed somewhat in the manner shown in *figs.* 276 and 279. There are covered seats in the rustic

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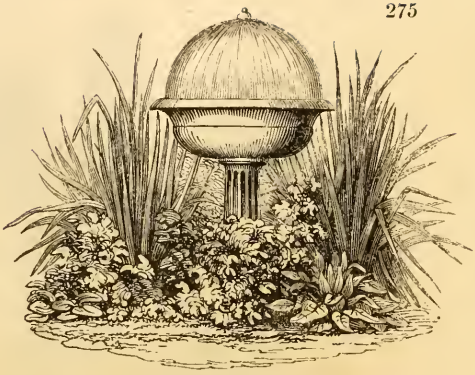

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style at *h*, *i*, and *k*. At *l* is a Dutch garden (*fig.* 280.), with a basin and fountain in the centre, surrounded and intersected by gravel walks, with twenty-four

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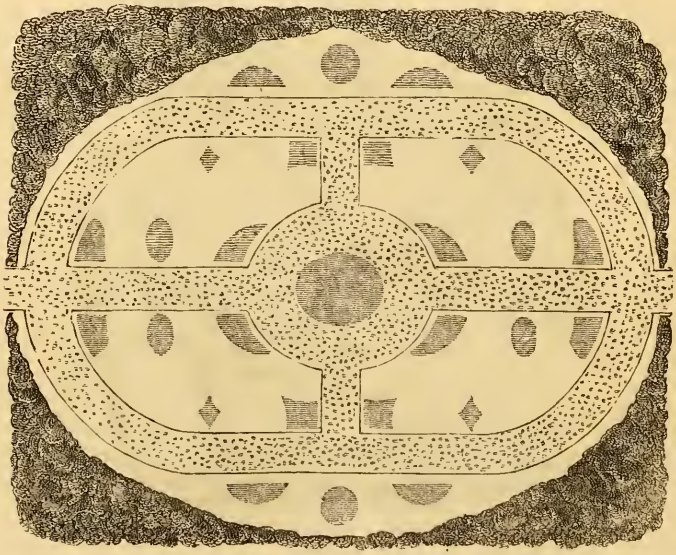

beds on grass, for growing the more choice florist's flowers in masses. There is a range of green-houses in the exotic flower-garden *g;* and there is a space at *m*, for setting out during the summer the greenhouse plants grown in pots; *n*, is an avenue leading to the great conservatory; *o*, is the reserve ground; *p*, the potting shed; *r*, frames and pits; *s*, working shed, containing different kinds of tools, &c.; *t*, a grove, containing some fine specimens of forest-trees; *u*, beds for masses of flowers, one sort in each mass; *v*, masses of dahlias; *w*, rustic vases for flowers; *x*, walks among steep banks of rockwork; *y*, bridge to convey one walk over another; *z*, greenhouse, with horizontal trellis in front, for choice climbing and creeping plants. Besides these references, there are arbours in different situations, covered with climbing plants, and a number of rustic vases for containing flowers. There is also a handsome architectural orangery, apart from this garden in the wood, which is approached by a noble avenue at *u*, on a moderate ascent; and on looking from it, five avenues are seen diverging in different directions through the descending wood, the under-growth of which is formed of rhododendrons and azaleas, like the woods at High Clere.

478. *Geometrical flower-gardens* are formed of beds, so arranged as to form a regular pattern, and placed on turf or gravel; and *fig.* 281. (the flower-garden at Esholt Hall, Yorkshire) will show the usual mode of laying out a garden of this kind. The ground is nearly on a level surface, with a slight inclination to the east, having a wall on the north side, 8 ft. high, and 100 yards in length, against which are placed different varieties of China roses, and various creepers, and half-hardy shrubs. On the east and west ends of the garden there is grass (not shown on the plan for want of room) to the extent of the wall, on which are planted hardy flowering shrubs, each shrub having a circle dug round it proportionate to the size of the plant; and these circles are chiefly planted with early flowering bulbs, as the crocus, snowdrop, narcissus, &c. All the walks are gravelled, and the beds surrounded with box, which is kept very low by frequent clipping. When the garden was formed, drains were cut in different parts of the ground 2 ft. below the surface, and the walks made from 1 ft. to 15 in. deep, and filled to within 3 in. of the surface with broken stones, or brick rubbish; each walk acting as a drain to the adjoining bed. There are small grates placed in the walks, over the main drains, which take away all the surface water, and render the walks quite dry and firm to walk upon in wet weather or after a shower of rain. The soil was either entirely taken out to the depth of 15 in., or mixed with compost suitable to the plants intended to be planted in each bed; and annually afterwards the beds underwent a partial renewal of soil, to suit the change of arrangement which was made with the greenhouse plants and annuals; and, as the dahlias were grown every year in the same places, a quantity of soil was taken out entirely where the plants had grown, and replaced with fresh compost every season. Most of the beds have patches of bulbs, or low-growing early flowering plants, planted about 6 inches from the box, and at regular distances, according to size; and in the following list these will be named as edgings in the arrangement of each bed:

1, *a*, Pæònia Moútan; *b*, Escallònia rùbra, &c.; *c*, crocuses, snowdrops, winter aconite, dog's-tooth violets, scílla bifòlia, &c., planted near to the edge of the bed; *o*, bulbs; *x*, herbaceous plants. Herbaceous plants, planted 1 ft. from the edge of the bed; with different species of Narcissus, planted close behind every fourth plant. The her-

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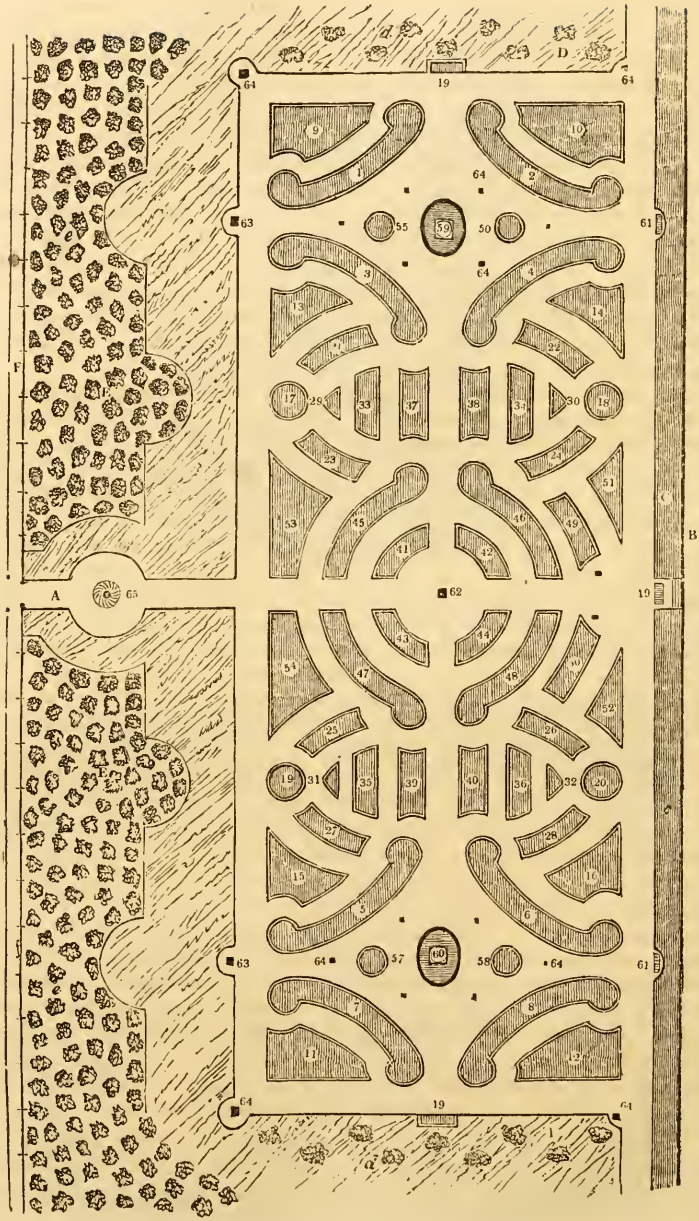

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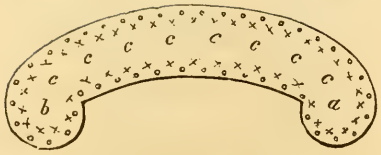

Beds from No. 1 *to No.* 8.

baceous plants are from a foot to two feet in height, and are varied as much in each bed as the number of species in the collection would allow. Some may think that the beds would be crowded with plants; but such has not been the case, as the bulbs have chiefly done flowering before the herbaceous plants have made much growth, and the herbaceous plants are nearly all over before the dahlias are in full bloom; which arrangement has insured a succession of flowers, from the first fine weather in spring, until the frosts kill the dahlias in autumn.

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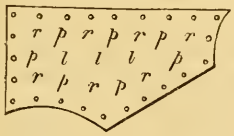

Beds from No. 9 *to No.* 12.

The beds 9, 10, 11, and 12, are severally planted with moss, perpetual, and select deciduous roses, marked *r;* and different varieties of herbaceous pæonies, marked *p;* with three patches of white lily, marked *l*, in each bed.

The bed numbered 9 is edged with Prímula farinòsa and Gentiàna septémfida.

10. Edged with Gentiàna acaúlis.

11. Edged with Gentiàna acaúlis.

12. Edged with double primroses. As soon as the pæonies have done flowering, China aster or Russian stocks are planted in front of each pæony for an autumnal bloom.

13. Common China roses, edged with aurícula, of varieties.

14. Noisette roses, trained on a flat trellis, and edged with Eránthis hyemàlis.

15. Common China roses, edged with Hepática, of varieties.

16. Noisette roses, on a flat trellis, and edged with Muscàri botryöides.

17. Azàlea póntica globósa in the centre, with snowdrops around the plant; then a circle of Mímulus ròsaes, and the bed edged with Alpine auriculas.

18. Kàlmia latifòlia in the centre, surrounded with crocuses, and edged with double primrose, and planted with Lobèlia grácilis for the summer.

19. Similar to No. 17, with Lobèlia grácilis for the summer.

20. Similar to No. 18, with Verbèna Melíndres for the summer.

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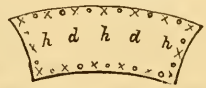

Beds from No. 21 *to No.* 28.
h, White lilies; *d*, dahlias.

The beds from 21 to 28 are all edged with different varieties of Cròcus and heart's-ease alternately, and were planted for summer flowering as follows:

21. Scarlet Pelargoniums.

22. Sálvia Grahàmi and S. angustifòlia.

23. Petùnia nyctaginiflòra.

24. Sálvia patens.

25. Mímulus cardinàlis.

26. Nierembérgia phœnícea grandiflòra.

27. Lobèlia fulgens.

28. Shrubby calceolarias.

29. Ròsa mìnor, edged with Hepática, and sown with Gília tricolor.

30. Dark China roses, edged with Saxifraga granulàta, and sown with Kaulfússia amellöides.

31. Select China roses, edged with Saxífraga granulàta, and sown with Collínsia bícolor.

32. Tea-scented roses, edged with Hepática, and sown with Nemóphila insígnis.

33. Choice tulips and German asters

34. Double tulips and Eschschóltzia cròcea.

35. Double anemones and Lasthània glabràta.

36. Double anemones and German asters.

37. Edged with choice heart's-ease, and mixed choice pelargoniums.

38. The same as No. 37.

39. Edged with choice heart's-ease, and mixed with greenhouse plants.

40. The same as No. 39.

41. Jonquils and Alonsòa lineàris.

42. Ranúnculus and Heliotròpium peruviànum.

43. Jonquils and Nierembérgia grácilis.

44. Ranúnculus aconitifòlia and Calceolària penduli flòra.

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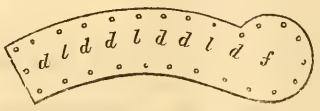

Beds from No. 45 to No. 48.

45. A fuchsia in each bed, surrounded with a circle of Eránthis hyemàlis; and, nearer the margin, a circle of dwarf larkspurs; *o*, patches of Anemòne Pulsatílla, A. apennìna, and other species; *l*, patches of different varieties of martagon lilies; *d*, dahlias for summer and autumn bloom.

49. Bulbous Iris and Agathæ'a cœléstis.

50. Bulbous Iris, and Senècio élegans fl. pl.

51. Tigrídia pavònia, edged with Campànula pùmila.

52. Gladiolus psittacìnus, edged with Campánula pùmila.

53. American plants, edged with double primroses.

54. The same as No. 53.

55. Azàlea coccínea, edged with Gaulthèria procumbens.

56. Azàlea coccínea, edged with Gaulthèria Shállon.

57. Rhododéndron pónticum, edged with several varieties of Heliánthemum.

58. Rhododéndron pónticum, edged with Erica herbàcea.

59 and 60. Tazza vases, which serve as dropping fountains during winter, and in the summer season with the jets, &c., of the late Mr. Rowland.

61. Seats.

62. Sun-dial.

63. Statues.

64. Vases, which are all elevated on stone plinths, proportionate to the size of the vase, and are filled with flowering plants during the summer season.

479. *Ornaments to flower-gardens.* The features above enumerated may be considered as the essential materials, or component parts, of a flower-garden; and to them may be superadded various ornaments, such as statues, spars, and other objects of curiosity, natural or artificial; rustic baskets, vases, or other contrivances for containing plants (see *figs.* 286. to 290); trelliswork, arcades for climbers, open and covered seats, summer-houses, and fountains, aquariums, rockwork, rootwork, grottoes, and grotesque objects; and, lastly, a greenhouse, conservatory, or some other building for plants. Now, these materials and ornaments being given, the next point is to lay down the principles for using them in the composition of a flower-garden. In this, as in every other species of design, the leading principle is the formation of a whole. For this purpose, there must be a consistency in every part, with reference to culture, and also with reference to lines and forms. One style of form and line must pervade the entire garden. In the simplest gardens, curved lines or straight lines, and acute angles or right angles, may prevail both in the ground and ornaments; but, in the more artistical kinds, the beds and walks may display the scrollwork or the embroidery of the French gardens. Whatever form or style is adopted as the

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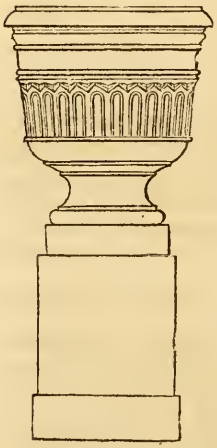

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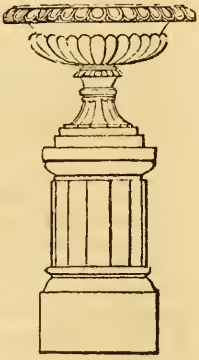

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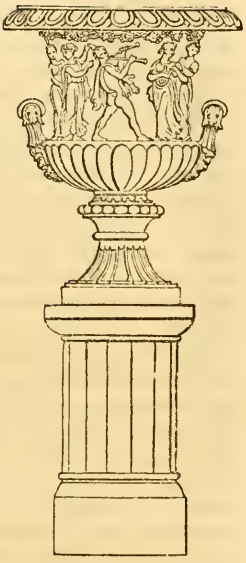

groundwork of the garden, that is, as the shape of the beds and walks, that form or style must pervade all the ornaments with which the whole is decorated. Where the beds are in scrollwork, the vases and the pedestals on which they stand, the trellis-work of the arcades, the statues, the seats and summer-houses, should all be of the style of Louis XIV. A simple classical vase or statue, in such a garden, would be quite out of place; and equally so would be an Italian summer-house, or an English thatched rustic seat. The artist is not limited to introduce only those component parts, or those ornaments, which were known in the time of Louis XIV.; but, such as he does introduce, he is bound to compose in that style.

480. *As remarks* applicable to the composition of flower-gardens generally, we may observe that ornaments should not be distributed equally over the garden; and that, as far as practicable, the ornaments should appear to arise out of something that is of use. For example, at the intersection of two principal walks, as conspicuous points in the design which attract the notice of all spectators, there may be a basin and fountain; and the parapet which forms the margin of this basin may be ornamented with vases. In the intersection

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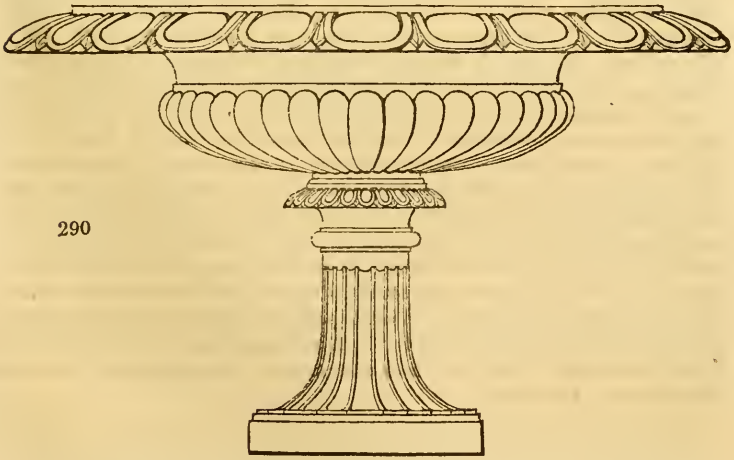
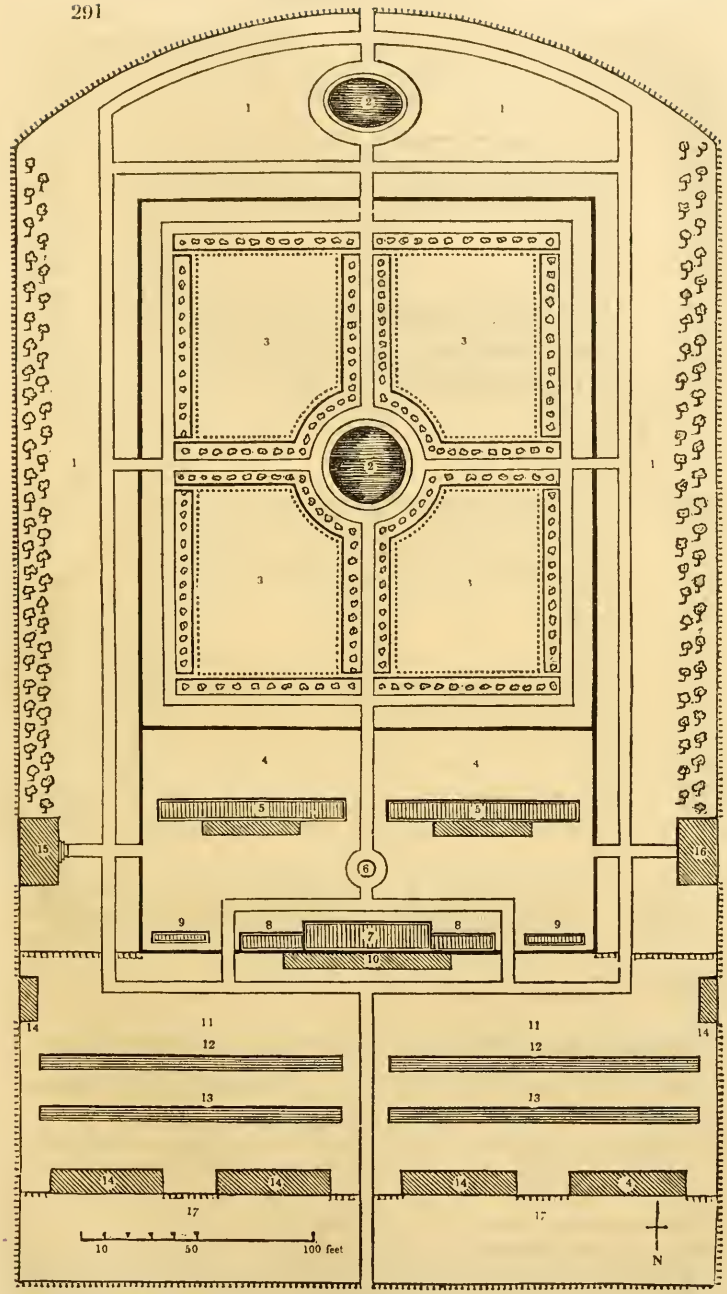


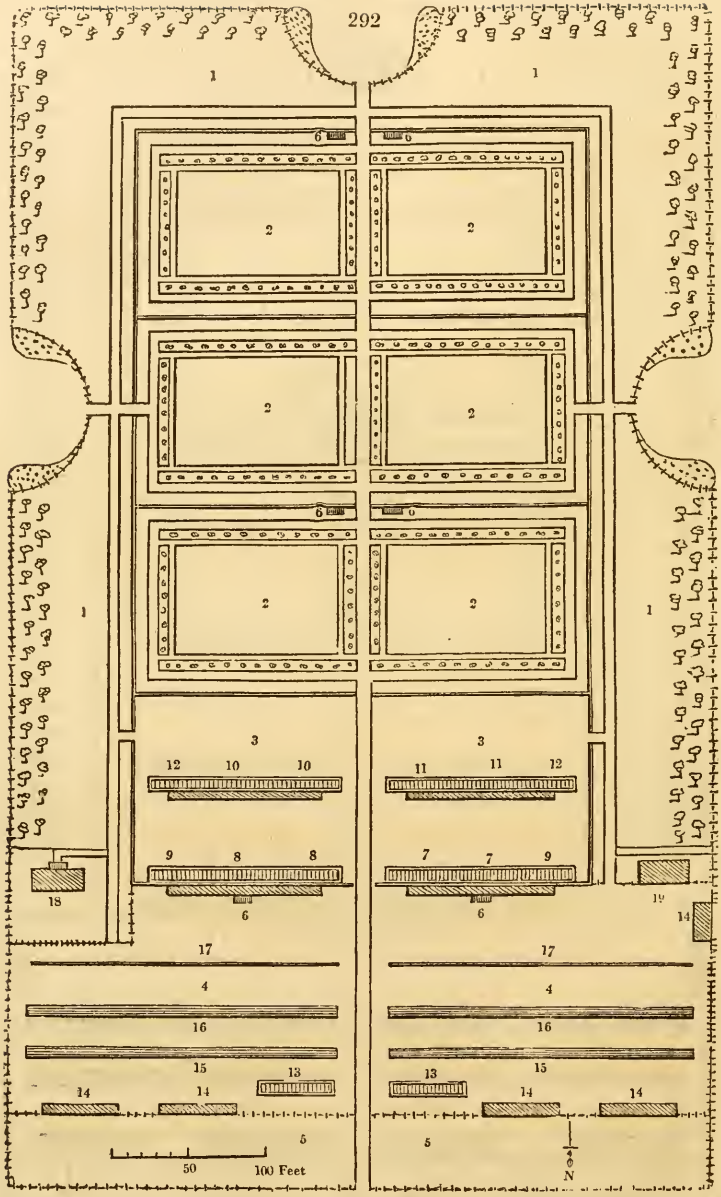
of other walks there may be a sundial on an architectural basement, or a statue on a pedestal. Where there is a terrace-walk connected with the house, or with some other building, it may be bordered by a parapet; and this parapet may be ornamented with statues, vases, or other architectural or sculptural ornaments, according to circumstances. In these and similar cases which might be mentioned, there seems to be a reason for the placing of the ornaments; that is, they appear as a finishing to the works of art to which they are attached, and they harmonise with all the associations connected with them. On the other hand, when a vase or a statue is set down on naked turf, in the midst of a bed of flowers, or in a group of shrubs, it seems in a false position, and loses its effect; not only from the want of proper accompaniments, such as an architectural basement, &c., but from the presence of such accompaniments as are improper, such as a basement of dug ground and flowers.

481. *A covered way of trelliswork and creepers* often forms a very suitable boundary for a flower-garden; and it is almost always an excellent approach to one from open scenery, or as a passage from one flower-garden to another. The reason is, that it confines the eye, and slightly darkens the vision; and this, being succeeded by a view of the open garden, its ornaments and the brilliancy of its flowers produce by contrast a more lively effect on the spectator. Trelliswork in the centre of a flower-garden, as a bower to sit in, is also useful; more especially if a portion of it should be continued for a few feet along each of the radiating walks, so that each may serve as a sort of telescope to the views of the garden, as seen by a spectator seated in the bower. The laying out of flower-gardens is too commonly intrusted to persons who have no knowledge of the principles of design; which is a proof that the possessors of them do not fully comprehend the beauties of which flower-gardens are susceptible. Were this the case, an artist would be considered as essential in this department, as he now is in any department of architecture, or of landscape gardening.

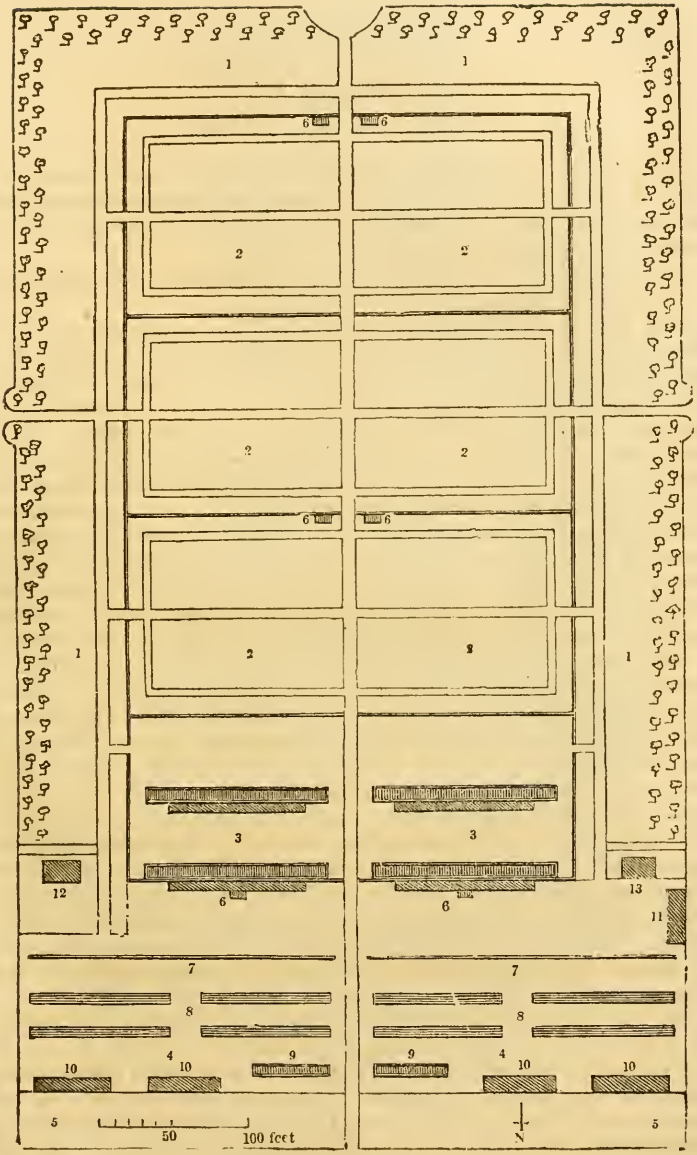
482. *Kitchen-gardens*, belonging to country mansions, are generally on a large scale, with various hothouses and pits for forcing, which are placed altogether in what is called the melon-ground. *Figs.* 291. 292. and 293., are kitchen-gardens, adapted to country mansions, with all the conveniences usual in such gardens. *Fig.* 291. is the plan of a garden, containing an acre and a half within the walls, and an acre and a half in the slips, which, however, may be easily curtailed if thought desirable. Instead of espaliers, dwarf-trained fruit-trees are introduced by the side of the walks; and if these be not approved, gooseberry and currant-trees may be substituted. Standard apple and pear-trees may be planted round the culinary department. *Fig.* 292. has two acres within the walls, and an acre and a half in the slips. This garden has entrances on the east and west sides, for convenience; and it has a broad gravel walk down the centre, to allow a pony carriage to be driven through it, with a space at the southern end for the carriage to be turned. In frame-ground, dwarf walls are introduced for training young fruit-trees. *Fig.* 290. contains three acres and a half within the walls, and two acres and a half in the slips. There are three entrances to this garden, but the other arrangements are as usual.



1. Slips, with standard apples, pears, cherries, filberts, &c., at the sides. 2. Ponds. 3. Culinary department, bordered with dwarf apple trees or gooseberry bushes, &c. 4. Forcing department. 5. Vineries, fig-house, and for forcing strawberries, &c. 6. Water-basin, or pump. 7. Pine-stove. 8. Peach-houses. 9. Pits. 10. Back-shed. 11. Frame-ground. 12. Cucumber ridge, early carrots, or potatoes under hoops, &c. 13. Melon or cucumber ranges. 14. Mush-room-sheds, tonl-house; sheds for wintering vegetables, &c. 15. Gardener's house. 16. Fruit and onion room, with lodging-room for under-gardener, and seed-room over. 17. Department for compost, mixing and turning dung, &c.



1. Slips. 2. Culinary departments. 3. Forcing department. 4. Frame ground. 5. For compost, mixing dung, &c. 6. Water tanks. 7. Pine stoves. 8. Vineries. 9. Small stoves. 10. Peach-houses. 11. Cherry-houses. 12. Fig-houses, or for other purposes. 13. Pine or melon pits. 14. Mushroom-sheds, tool-house, &c. 15. Melon and cucumber ranges. 16. Cucumber ridge; early carrots, &c. under hoops. 17. Dwarf walls for training fruit trees, or for tomatoes. 18. Gardener's house. 19. Fruit and onion rooms, with under-gardener's lodging-room, and seed-room over.



1. Slips. 2. Culinary departments. 3. Forcing department, with ranges of forcing-houses for adaptation, as may be required. 4. Frame ground. 5. For compost, mixing and turning dung, &c. 6. Water tanks. 7. Dwarf walls for training fruit trees, &c. 8. Ranges for framing, cucumber ridge, carrots and potatoes under heaps, forcing asparagus, &c. 9. Pine or melon pits. 10. Mushroom sheds, and for other purposes. 11. Open shed for compost, &c. 12. Gardener's house and yard. 13. Fruit and onion room, with seed-room over, and lodging-room for under-gardener.

SECTION IV.

DESIGNS FOR COUNTRY MANSIONS.

483. *As Country Mansions* are generally places of too much importance to be laid out without the aid of regular architects and landscape-gardeners, we shall only give a very few examples: and these, with only one exception, will be of places actually in existence.

DESIGN XXX.—*Plan and description of Wimbledon House, Surrey, the property of Mrs. Marryatt.*

484. *General Observations.*—This estate, which once belonged to the celebrated Bond Hopkins, Esq., and was laid out for him about the middle of the last century, consists of about 100 acres of table-land, slightly varied on the surface, not by undulations, bold swells, deep valleys, or precipitous declivities, but by unconnected hollows, or large gullies, of little beauty in themselves, but capable of producing considerable effect when filled with water, as the principal one now is. In a word, the grounds at Wimbledon House have naturally little to recommend them beyond their extent, and the circumstance of their falling in a gradual manner from the lawn front of the house, so as to display from that front an interesting view of the distant country. The chief merit of the place, as a suburban residence, consists in its completeness, the whole lying compactly within a ring fence, and there being a most commodious mansion, with complete domestic offices, a park, a farm (including a dairy and a poultry-yard), a kitchen-garden, and a flower-garden; the latter, perhaps, unrivalled in the neighbourhood of London, for the number of species and varieties of herbaceous plants that it contains. Mrs. Marryatt has long been an enthusiastic admirer of flowers, and especially of such as are sufficiently hardy to make a display in the flower-garden. She also maintains a good collection of greenhouse and hothouse plants; and many of these, as well as hardy plants, have flowered at Wimbledon House for the first time in England, as the botanical periodicals for the last twenty years bear ample witness. Among the more beautiful and remarkable greenhouse plants which have flowered for the first time at Wimbledon, is the *Tacsònia* pinnatistípula, one of the most elegant, and at the same time singular, of climbing shrubs. There are few horticultural exhibitions that have taken place since the Society commenced this mode of encouraging gardening, in which Mrs. Marryatt, or her gardener, Mr. Redding, has not obtained a medal.

485. *The Park at Wimbledon House* cannot be considered as having been planted with much taste; but there are some fine old trees in it, near the house, especially evergreen oaks. The pieces of water do not form agreeable shapes on paper, but, in the reality, at a distance from the eye, and with their outlines more or less disguised by trees, the effect is good, particularly that of the principal one, seven acres in extent, as seen from the house. *Fig.* 294. shows a portion of this piece of water, looking towards the house. Beyond a certain size, the form of a piece of water is of little consequence; but when it is so small as to be readily comprehended as a whole by a spectator at no

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great distance from it, then, in order to please, it must be of an agreeable shape.

486. *What constitutes an agreeable shape in a lake, pond, or piece of still water?*—To this question we answer, that whatever constitutes an agreeable

shape on level ground or lawn, or on any other flat surface, will look equally well in water. A shape, whether of smooth lawn or still water, to be agreeable, must be such as to be readily comprehended by the eye and the mind at a single glance; and for this purpose the general form must be simple. It may be an oval or a circle, or it may be some form in which the length and breadth are more conspicuous elements than the sinuosities of the margin, and in which, consequently, the whole will always produce its full effect before the eye is attracted by the parts. These may be considered as fundamental principles; and, in applying them to the different styles in which water is formed, or surfaces of lawn surrounded by trees or shrubs, the characteristics of these styles readily come to our assistance. For example; in forming a piece of water in the geometric style, the outline must be composed of either straight or regularly curved lines. The general form may be a square, an octagon, or a parallelogram, and this general form is that which will produce the first impression on the mind of the spectator; but the margin of the geometrical figure may be composed of numerous segments or tangents, so as to form an intricate outline, which will afford amusement to the spectator when he approaches near enough to the figure to examine it in detail. If we form a piece of water in imitation of the ponds and lakes of nature, in what is called the picturesque manner, we must still begin by some simple form, and trust to this for the general impression. This being firmly established, the margin may be varied by prominences and recesses, and trees and shrubs (as shown in *fig.* 295.), to any extent that does not interfere with the effect of the

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figure as a whole. If a piece of water is to be formed in the gardenesque manner, the same general principles are followed; but, as all the details of the margin require to be comparatively distinct, and all to appear decidedly artificial, greater care is requisite to combine regularity, uniformity, or symmetry, with variety.

487. *In modern gardening, a long winding canal of still water* is frequently the most effective form in which that element can be introduced; and it is sometimes so good an imitation of a river in a tame country, as to leave nothing to be desired. This, however, can only take place where long reaches of it are seen at a considerable distance from the eye, as at Oatlands; or where it is seen only in successional portions, by a spectator walking near

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it, and the walk being of considerable length, as at Esher. Sometimes a bridge may be introduced over a piece of water of this kind with very good effect; but care must be taken to let the size of the arches be proportionate to that of the house and grounds. This bridge, with massive stone arches, as shown in *fig.* 296, would be out of place where everything around was of small size; and a bridge with small low arches, as shown in *fig.* 297, would

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have a much better effect. Most commonly such canals are near the eye, vary considerably in width, and are generally contracted towards both extremities, so as to leave no doubt in the mind of the spectator that they are only ponds. Pieces of water of this kind are frequently of such a length as not to be seen all at once, but in succession; and as, from the irregularity of their width, they can never, when so seen, be mistaken for a river, they ought to

be treated in such a manner as to give them the appearance of a winding lake; which, being seen in successive portions, each of these ought to have an agreeable shape. These shapes are produced on the principles already laid down, viz., of displaying some obvious figure as a whole, and concealing the water altogether by wood wherever the desired form is interfered with by the opposite shores of the lake or canal approaching, or seeming to approach, each other too nearly. When a winding sheet of water is at such a distance from the eye as to be seen all at once, then all that can be done is, to cause it to wind agreeably, either by directing its bends in a manner more or less regular or symmetrical, or by creating an obvious allusion to some recognised figure. Thus, the general tendency of the winding may be to produce a crescent-like form; or it may be serpentine; or there may be one conspicuous bend in some regular form, and the subordinate bends may be comparatively indistinct. The safe guide in this case is, the principle already laid down, of producing some form which may take the lead, and be recognised at once; and trusting for variety to the subordinate forms, and to the details.

488. *As there is no such thing in nature as a piece of water without an outlet*, or as a lake from which there does not issue a brook; so, in landscape-gardening, no piece of still water ought to be formed, in which there is not some point indicated, which the brook might be supposed to flow from. In the geometrical style of forming pieces of water, the brook is represented by a formal cascade; and, in natural-looking shapes, there is commonly also a cascade, or something of the kind, in the way of outlet; or, if there is not, a

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portion of the margin, in what is decidedly the lowest part of the general surface of the ground, ought to be concealed by trees, or by an island, so as to leave the spectator room to suppose that there is an outlet in the proper place. Most lakes are also supplied by brooks; and, for this reason, in all imitations of them, whether gardenesque or picturesque, there ought to be an indication of the point at which the brook or rill expands into a lake, as well as of that where it contracts again into a brook. Where a rill or small stream runs through a narrow valley, it sometimes happens that a succession of dams are formed across the valley, in order to produce a succession of ponds; and when the dams are not disguised by wood, and the margins properly varied, this is one of the most formal and unartistical appearances which artificial water can be made to produce. In valleys which are nearly flat, ponds formed by throwing dams across are more easily managed; but even in cases of this kind, the dam is frequently left naked, and the margin of the water unbroken by trees or islands.

Fig. 298. shows two ponds which existed some years ago in a valley at Lyne Grove, near Chertsey, Surrey; and *fig.* 299. shows the manner in which we proposed to reduce both pieces to the same level, to vary the margin by islands, and to form a cascade at *a* in *fig.* 299.; where also a hydraulic ram might be erected for forcing up the water to a cistern on the top of the dwelling-house. Notwithstanding this digression on the forms of artificial water, yet that element is so great an addition to landscape, that, where it has a clear surface, and is of a sufficient extent to receive a breadth of light, it is

admissible in almost any shape; and this is exemplified by the effect produced by the pieces of water in Wimbledon Park, than which none were ever formed of less artistical shapes.

489. *Ground plan, &c.*—We shall now proceed to describe the plan, *fig.* 300:

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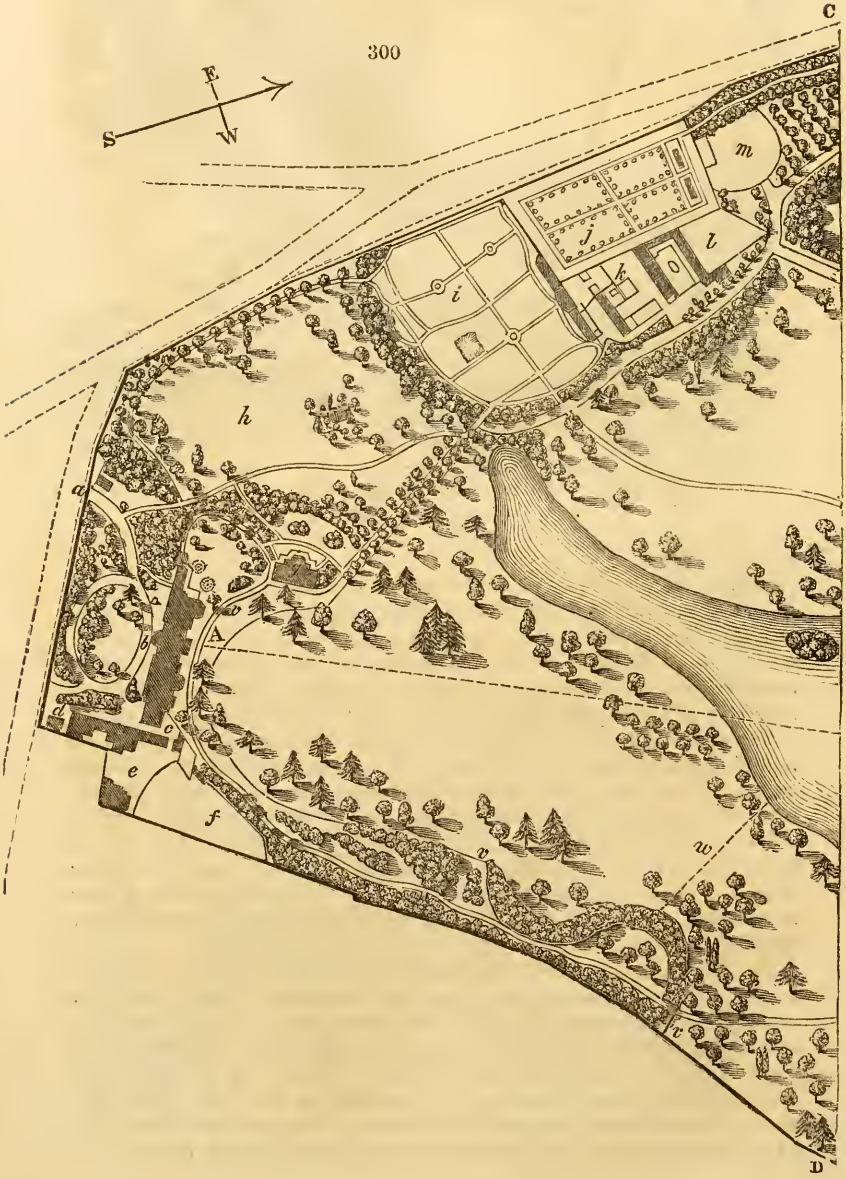

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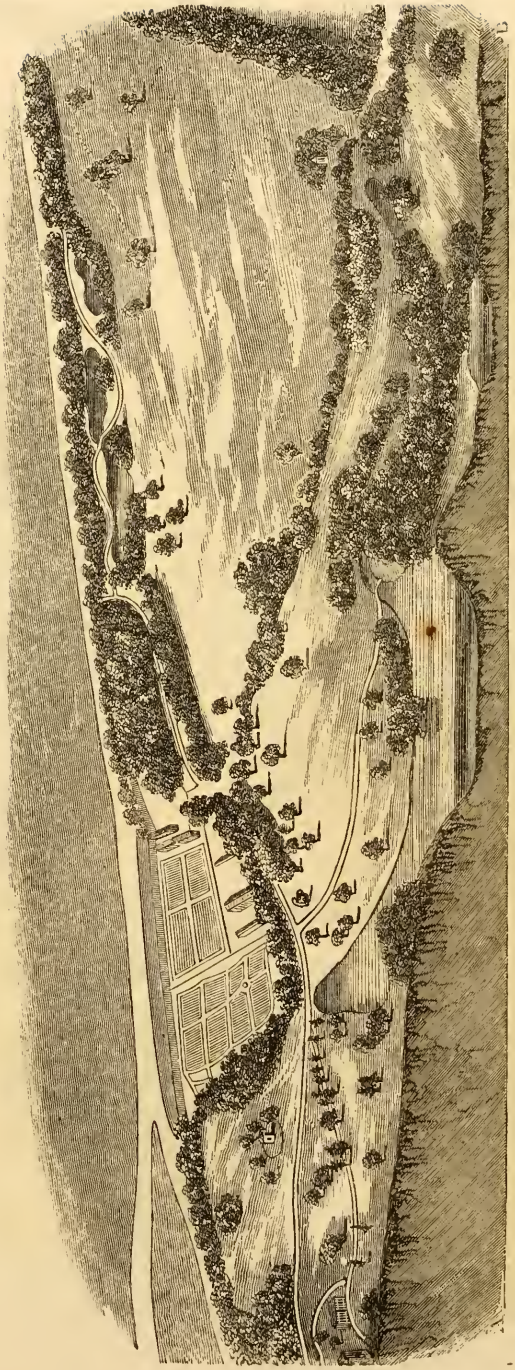
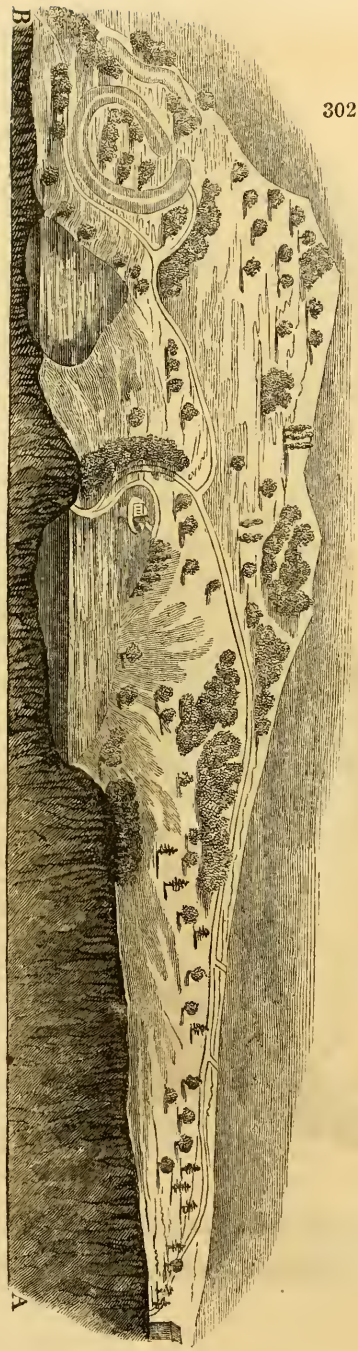


Geometrical Section of the Ground, and Bird's-eye View of the Park, Flower-garden, and Kitchen-garden, at Wimbledon, on the Line A B, looking to the West.



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Geometrical Section o the Ground, and Bird's-eye View of the Park, at Wimbledon, on the Line B A, looking to the East.

a, The entrance lodge.
b, The entrance portico to the mansion.
c, The kitchen-court.
d, The stable-court.
e, The laundry, and brewhouse court.
f, The drying-ground.
g, The green-house, with a summer-house at the back.
h, Paddock, containing an ancient building, formerly a mill for raising water, surrounded by a mass of plantation.
i, Flower-garden.
j, Kitchen-garden.
k, Poultry-yard.
l, Farm buildings.
m, Rick-yard.
n, Arable land.
o, Paddock, with a beautiful architectural grotto at *p* (formed by Bushell, who constructed the grottoes at Oatlands, Pain's Hill, and other places), and another ornamental building at *q*.
r, Osier-ground.
s, Island and ruin; the latter used as a Catholic chapel by the Prince de Condé, who resided at Wimbledon House before it was purchased by the late Joseph Marryatt, Esq.
t, Wilderness and fish-stews.
u, Open grove of ancient trees.
v v v, Wire fence, separating the pleasure-ground and mown grass from the park.
w, Hurdle fence, separating the upper from the lower park.
x x, Fish-ponds.
y, Drinking-pond.
z, Well, near which is a hydraulic ram, which, put in motion by the waste of the upper piece of water in its course to the lower piece, forces a supply to the roof of the mansion, and to the sheds of the hot-houses.

Fig. 301. is a geometrical section of the ground, and bird's-eye view of the park, looking to the west.

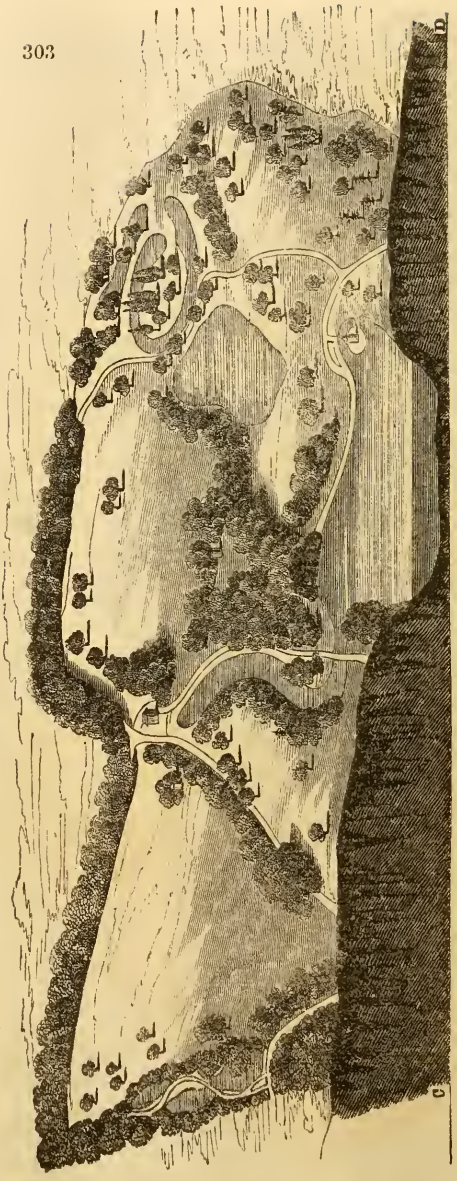
Fig. 302. is a section and bird's-eye view, taken on the same line, looking to the east.

Fig 303. is a section and bird's-eye view, looking to the north-east.

Fig. 304. is a section and view, looking to the south-west, and showing the front of the house. It will be observed from the lines indicating walks, that there is one which makes the entire circuit of the residence, besides several cross walks. It will also be observed, that the carriage communication between the farm-yard and the stable offices at the house is by the public road, though there is a private carriage road, in a more direct line, through the mill paddock.

Fig. 307., p. 434 and 435, is a ground plan of the flower-garden and kitchen-garden on a larger scale.

303



Geometrical Section of the Ground, and Bird's-eye View of the Park, at Wimbledon, on the Line C D, showing the Wilderness, Fish-ponds, &c., looking to the North-east.

a, The entrance to the flower-garden from the house, through the avenue *b*; the doorway of the garden exhibiting a rustic arch, as shown in the sketch, *fig.* 306. From the point *b*, a walk branches off through the mill-paddock to the entrance front of the house, so that persons may come and go to the gardens without going through the house.

b, Elm-tree avenue, decorated, during summer, with a row of China vases, placed at regular distances along each side of the gravel walk, and each containing a choice flower.

c, A superstructure of rustic-work, with an elevated rustic vase in the centre, and surrounded

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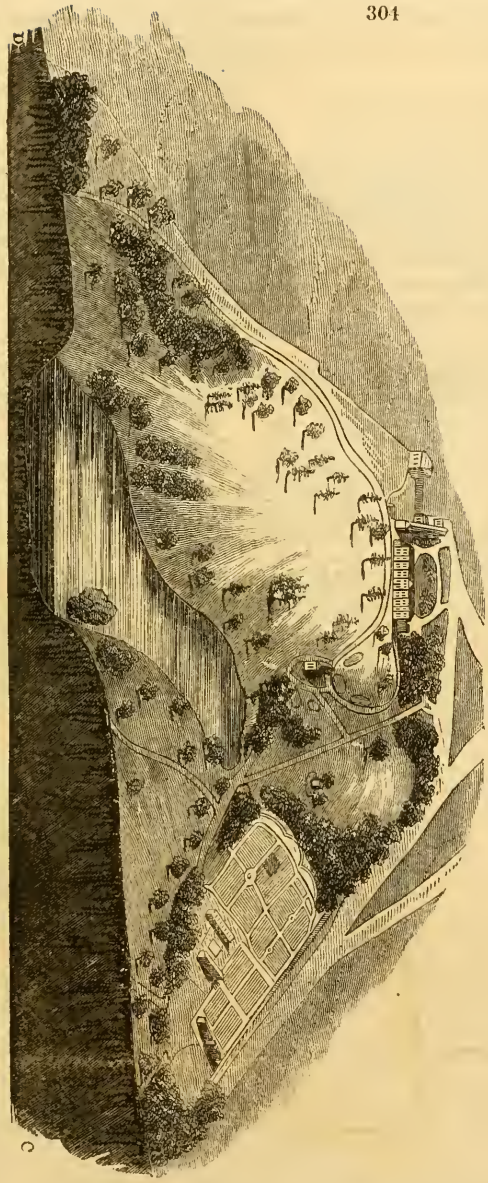

Geometrical Section of the Ground, and Bird's-eye View of the Park, at Wimbledon, on the Line D C, *including the House, Flower-garden, Kitchen-garden, Farm, &c., looking to the South-west.*

by beds, with borders of rustic-work. The circumference consists of an arcade, connected by a column clothed with creepers in the centre, by garlands of creepers twined round chains; and having at a distance the appearance shown in *fig.* 309.

d, Pond, with a fountain in the centre, containing numerous aquatics of different species, and surrounded by rock-work, as shown in *fig.* 312.

e, Marble basin and fountain.

f, Bower of trellis-work.

g, Elevated platform, ornamented on the side next the flower-garden with a screen of rustic-work, and with rustic vases filled with flowers.

h, Arcade, covered with creepers.

i i, Conservative wall, on which are many very interesting exotic shrubs.

k k, Plant-houses, with rockwork in front planted with select ornamental herbaceous plants and under-shrubs. The central house (*l*) is a green-house, and those to the right are also green-houses, while those to the left are hot-houses. At the back of one end of the central green-house is a door, which opens to the private or reserve court (*m*), in which there is a pelargonium-house, with a range of pits along the front, for Cape bulbs; and in the interior of the court are various other pits and frames.

n, Large reserve-ground, surrounded by the potting and working sheds, tool-houses, seed-room, men's room, &c.

o, Farm-yard, the details of which will be found below.

p, Poultry-yard.

q, House of the gardener and general manager. *r*, Barn.

s, Yard for rubbish, pea-sticks, &c.

t, Pine-pits in the kitchen-garden.

u u, Part of the private road from the mill-paddock to the farm-yard, rick-yard, and arable field; and which crosses the elm avenue, near the entrance to the flower-garden: but this road being little used, and that only early in the morning, no perceptible marks of it are seen in the elm avenue. This avenue having a wire fence on both sides, a gate is placed in each fence, one opposite the other; and these gates are opened whenever carts are to pass. *v*, East entrance to the flower-garden.

w, Road from Wimbledon to London. *x*, Wimbledon Common.

y, Upper park, or lawn. *z*, North park, adjoining the arable ground.

Fig. 305. shows the ground plan of the farm-yard and poultry-yard, and also of the range of plant-houses, on a larger scale than in the preceding plan.

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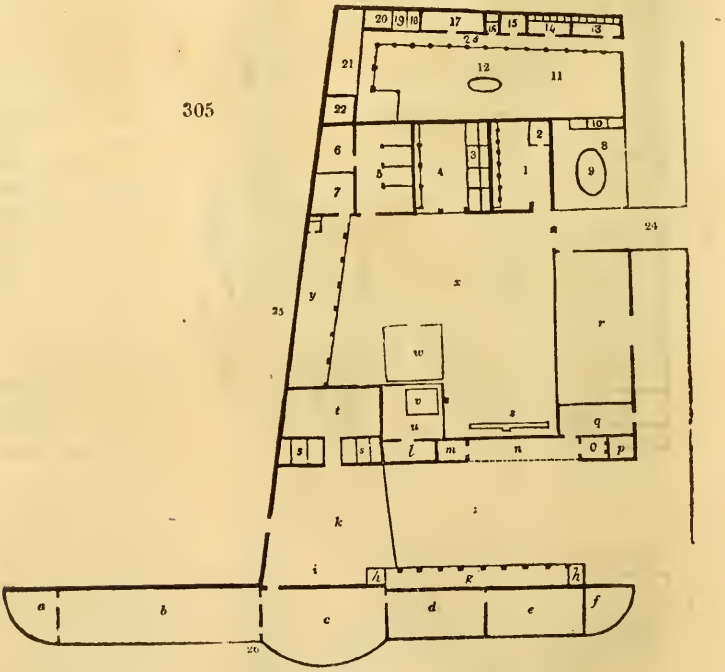


a, Orchideous house. *b*, Plant stove.

c, *d*, and *e*, Greenhouses, with vines trained under the rafters.

f, Aviary. *g*, Working-shed. *h h*, Furnaces.

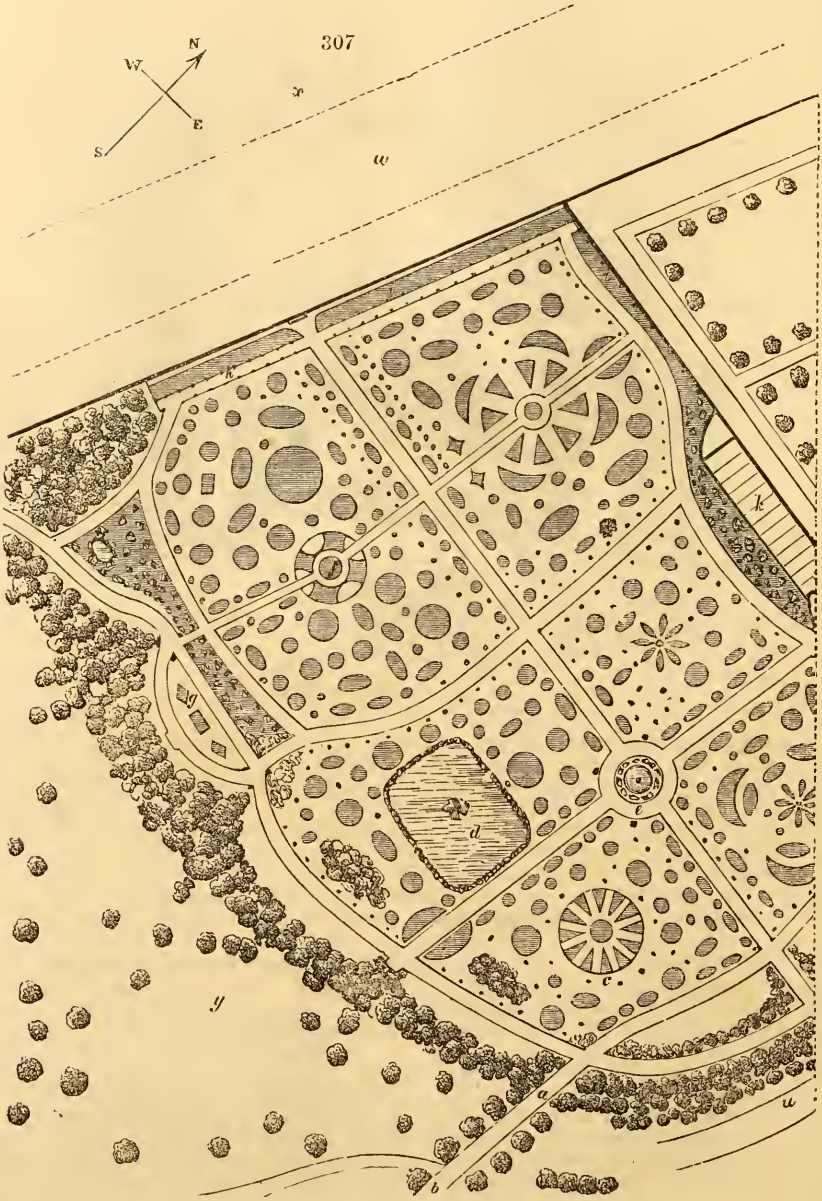
i, Situation of the cistern on the top of the brick wall of the green-house, to which water is raised by the hydraulic ram, mentioned in p. 429.; whence it is conducted to the different plant-houses, and to the fountains in the open garden, by pipes.

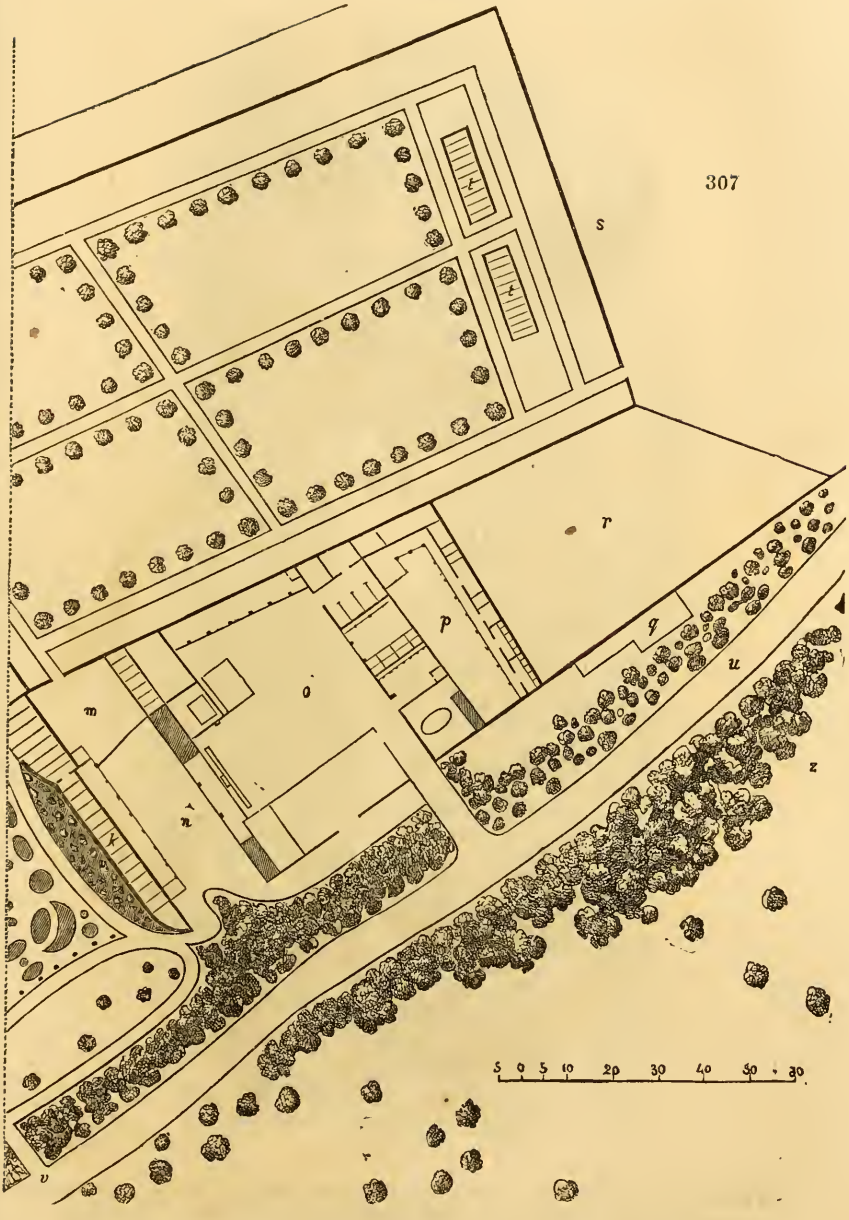
Entrance to the Flower-garden at Wimbledon House.

j, Reserve-yard and working-ground. *k*, Reserve-ground for plants in pots.
l, Coal-shed. *m*, Tool-shed. *n*, Pot-shed. *o*, Man's-room.
p, Seed-room. *q*, Carpenter's shop *r*, Barn. *s s*, Pits for Cape bulbs.
t, Pelargonium house. *u*, Enclosed yard. *v*, Liquid manure tank.
w, Granary, supported on stone pillars, with caps to prevent the ascent of rats and mice.
x, Open yard. *y*, Cattle-shed, with fodder-rack *z*, Pump and drinking-trough.
1, Cow-house. 2, Calf-pen. 3, Pigsties.
4, Open cattle-shed, with fodder-racks. In the back wall there is an opening, with a shutter, to allow fowls to pass through from the poultry-yard, so as to pick up what food they can, in the cattle-yard.
5, Stable for cart-horses. 6, Hay-room, and place for cutting straw into chaff.
7, Pigsty, near which there is a privy for the farm servants.
8, Yard for ducks, enclosed by trelliswork.
9, Oval pond, paved with brick, into which is thrown the food for the ducks.
10, Houses for the ducks. 11, Poultry yard.
12, Stone basin, to contain water for the poultry.
13, Laying-house for common fowls. 14, Laying-house for hen turkeys.
15, General fattening-house. In this house, common fowls, turkeys, and ducks, are all kept loose, and fattened together. It is found that this mode contributes generally to their fattening; because, whenever one bird goes to eat, the others are stimulated to imitate it.
16, Place for fattening quarrelsome fowls, one fowl being fattened in it at a time.

17, Rabbit-house, in which the rabbits are kept in hutches.

18, Turtle-doves, formerly kept for ornament in a building at one end of the range of hot-houses, but the space is now occupied with a house for *Orchideæ*.





19, House for pheasants; which are bred here, and afterwards turned into the park.

20, Pigeons. These have their principal entrance in the roof, and have always a salt-cake placed on the floor.

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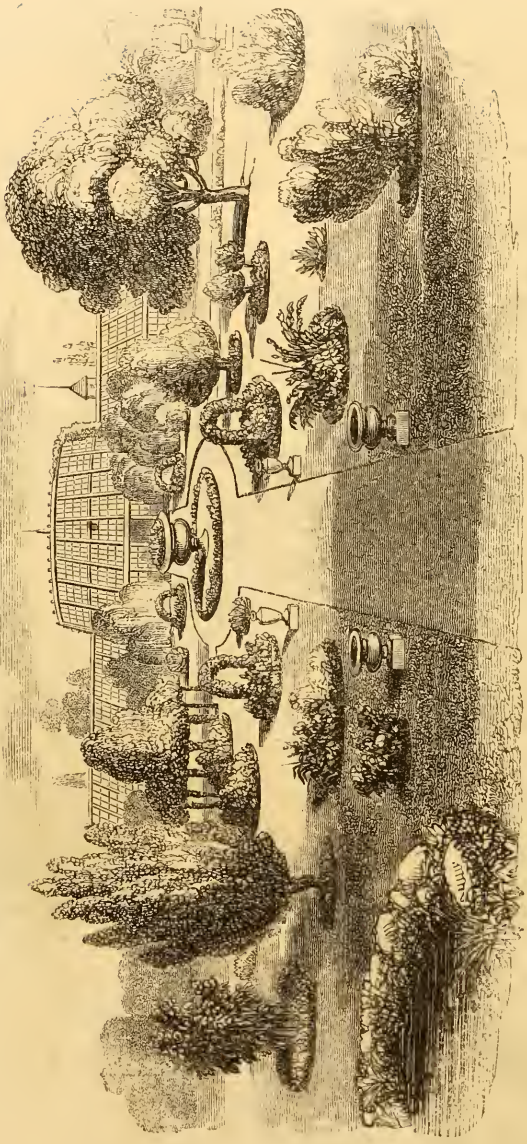

Flower-garden at Wimbledon House, showing the main Walk and Plant-houses.

21, Fowls' roosting-house. Here the fowls roost on horizontal strips of board, about 2 in. on the side, and raised, so as to form a slope, from the floor in the front of the house to the top of the back wall, in the manner of a greenhouse stage. The object of this is to facilitate the ascent of the fowls, and to prevent them from dirtying one another when at roost. 22, Pigsties.

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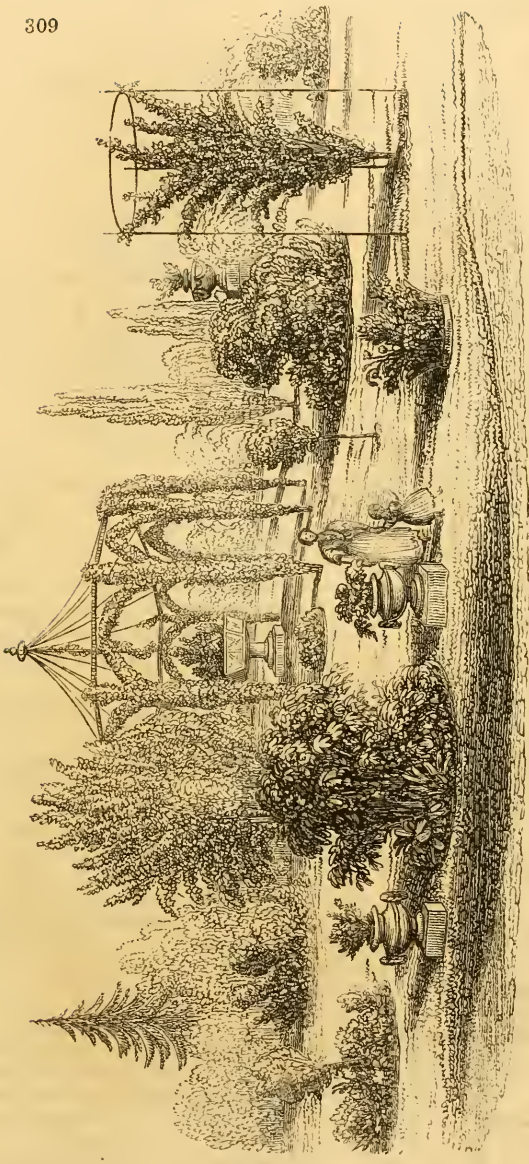

Flower garden at Wimbledon House, showing a Rustic Structure and Vase.

23, Covered way to the poultry-houses, paved with Dutch clinkers, as are all the houses in this yard. 24, Entrance to the farm-yard. 25, Kitchen-garden.

26, Flower-garden, of which a general view, showing the main walk and the plant-houses is given in *fig.* 308.; and views of the entrance, rustic structure, and fountain, in *figs.* 306., 309., and 312. 27, Park.

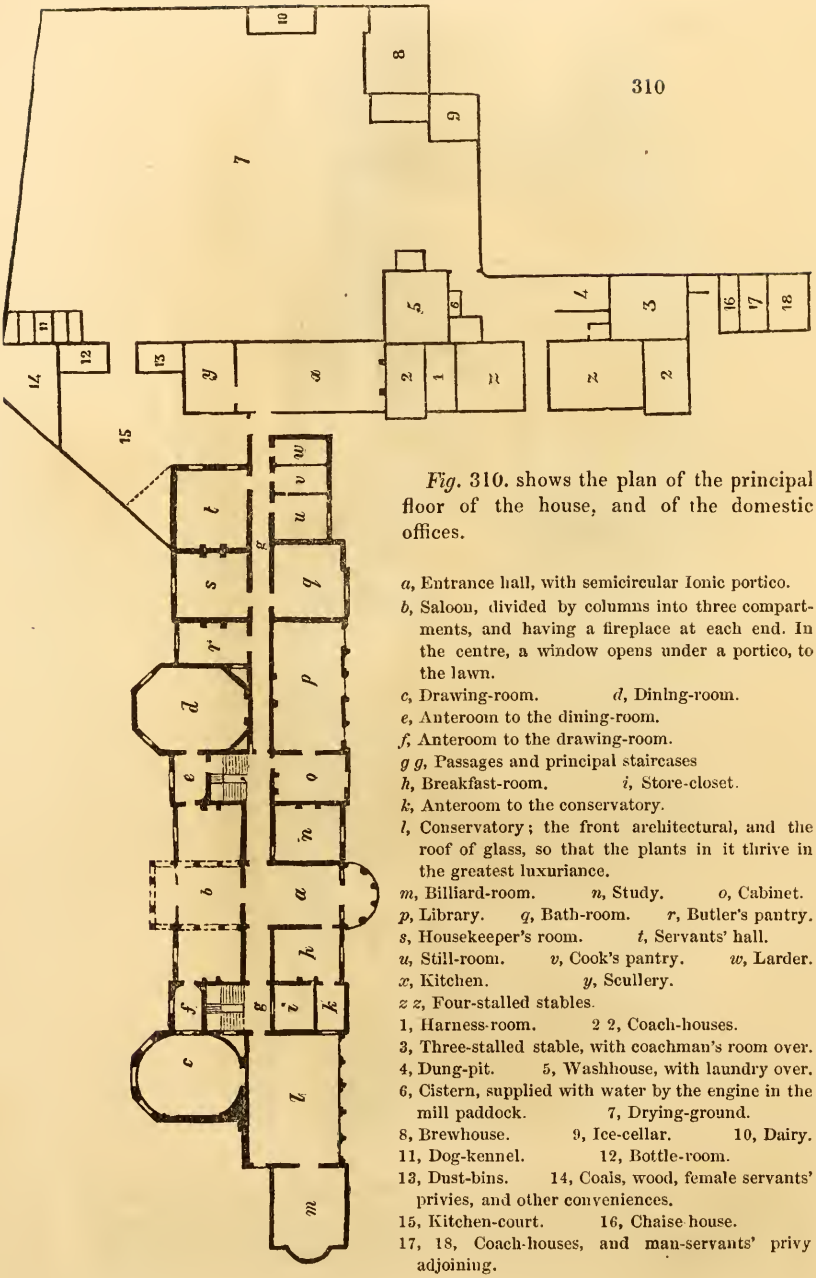

Fig. 310. shows the plan of the principal floor of the house, and of the domestic offices.

a, Entrance hall, with semicircular Ionic portico.
b, Saloon, divided by columns into three compartments, and having a fireplace at each end. In the centre, a window opens under a portico, to the lawn.
c, Drawing-room. *d*, Dining-room.
e, Anteroom to the dining-room.
f, Anteroom to the drawing-room.
g g, Passages and principal staircases
h, Breakfast-room. *i*, Store-closet.
k, Anteroom to the conservatory.
l, Conservatory; the front architectural, and the roof of glass, so that the plants in it thrive in the greatest luxuriance.
m, Billiard-room. *n*, Study. *o*, Cabinet.
p, Library. *q*, Bath-room. *r*, Butler's pantry.
s, Housekeeper's room. *t*, Servants' hall.
u, Still-room. *v*, Cook's pantry. *w*, Larder.
x, Kitchen. *y*, Scullery.
z z, Four-stalled stables.
1, Harness-room. 2 2, Coach-houses.
3, Three-stalled stable, with coachman's room over.
4, Dung-pit. 5, Washhouse, with laundry over.
6, Cistern, supplied with water by the engine in the mill paddock. 7, Drying-ground.
8, Brewhouse. 9, Ice-cellar. 10, Dairy.
11, Dog-kennel. 12, Bottle-room.
13, Dust-bins. 14, Coals, wood, female servants' privies, and other conveniences.
15, Kitchen-court. 16, Chaise-house.
17, 18, Coach-houses, and man-servants' privy adjoining.

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View from the Lawn Front of Wimbledon House.

There are several other minor conveniences in this and the three preceding plans, such as water-closets, &c., which we have not thought it necessary to particularize; and in the plan, *fig.* 307. there are several rustic seats, benches, and resting-places, which have not been noticed. There is also a reserve ice-house near the head of the upper lake.

490. *General appearance of the grounds.*—In order to convey an idea of the general effect of the park and garden scenery of Wimbledon House, and to afford some relief to the reader after the fatigue of perusing so many details, we shall briefly notice the general impressions the scenery made on us when we first saw the place some years ago. Passing through the entrance-hall and the saloon to the gravel walk on the lawn front, a magnificent panoramic view presents itself; consisting of park scenery in the foreground, enlivened with a fine piece of water (see *fig.* 311.), and with a rich, verdant, tame country in the extreme distance. Among the trees in the park are some fine old oaks and beeches, some very large evergreen oaks, and several large pines, firs, and cedars. The stranger, if he proceeds along the gravel walk to the left, will find it lead him to an ancient green-house, or orangery, and thence to the flower-garden, the kitchen-garden, the farmery, and the farm. If, on the contrary, he walks to the right, he will pass through a variety of scenery, at first highly polished with a smoothly mown lawn, and afterwards of a more rustic description; till, having walked upwards of a mile, he arrives at the flower-garden, kitchen-garden, &c., last instead of first. We took the right-hand walk from the house, and, passing along it, the first remarkable objects which struck us in the foreground were some very large evergreen oaks, with trunks $2\frac{1}{4}$ ft. in diameter. On the right was a rural fruit-garden, planted with the common summer fruits, such as the cherry, gooseberry, raspberry, strawberry, &c., for the indulgence of the young people, who were allowed to gather them here for themselves. This may be called a children's fruit-garden; and it appears to us one of the most amiable features, next to children's gardens (that is, gardens which they are to lay out and cultivate themselves), that can be formed in a suburban residence. Near this rural fruit-garden was a garden for British plants, managed solely by Miss Marryat; and beside it was a dell filled with rhododendrons, which, from the moistness and shadiness of the spot, had attained an extraordinary size, and were growing with great luxuriance. Adjoining the evergreen oaks was a large cork-tree, a very fine *L*igústrum lùcidum, gigantic common and Portugal laurels, a large red cedar, a *R*hododéndron pónticum upwards of a hundred feet in circumference, and immense masses of ivy supported on pollard oaks, which looked like some strange kind of evergreen tree; and, farther on, were several lofty silver firs. Passing through a small wicket in the wire fence which separates the pleasure-ground from the park, but still following the walk, we found ourselves in comparatively open scenery; and, the atmosphere being tolerably clear, we observed the towers of Westminster Abbey and the dome of St. Paul's in the extreme distance. From some points of view, Wimbledon Park, the seat of Earl Spencer, which borders Wimbledon House, on two sides, contributes to the effect of the scenery in the park belonging to the latter, more especially by the aid of a beautiful sheet of water; and, in one part, the windings of the Thames itself are seen from a seat under an immense beech-tree, one branch of which measured, in 1829, 75 ft. in length. Passing through a rustic gate, we arrived at a spacious ivy-covered summer-house, situated on a slight eminence, and furnished with a large table and matted seats, capable of accommodating a party of twenty. This summer-house overlooks that part of the grounds which is called the Wilderness (*fig.* 311.), in which there are several pieces of water, overhung with weeping willows, and inhabited by numerous wild aquatic fowl. Descending from the

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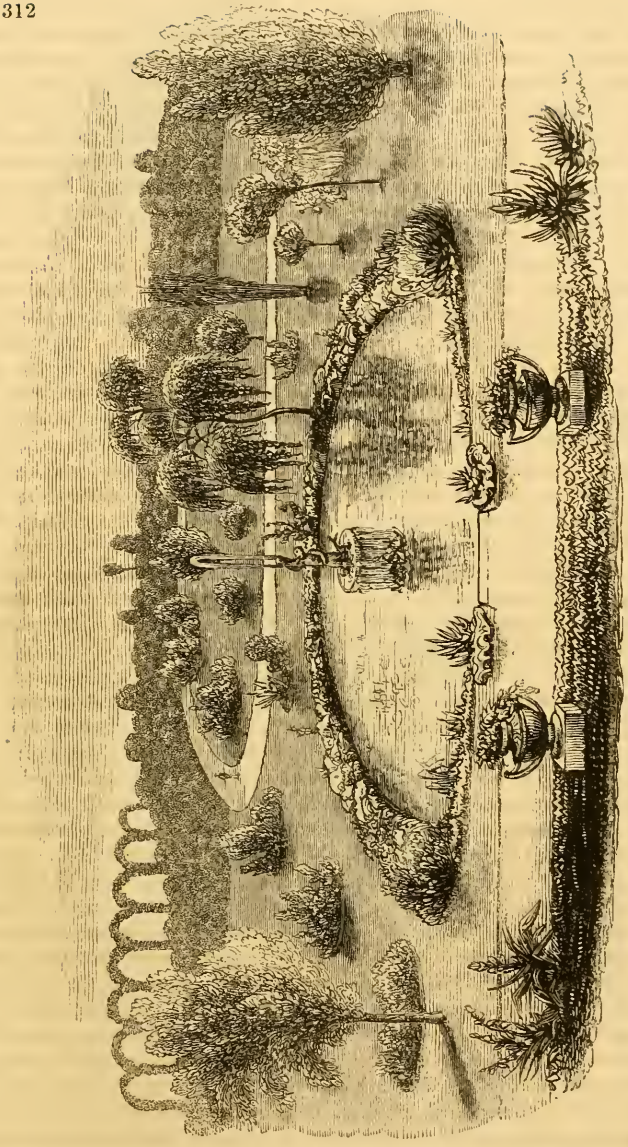

Flower-garden at Wimbledon House, showing the Pond and Fountain.

summer-house, we passed a rocky cascade, studded with alpine plants, and ascended, through a shrubbery, to a romantic grotto; from the entrance of which there is the retired home view shown in *fig.* 313. This grotto was formed by Bushell,—the most celebrated grotto and cascade artist that ever appeared in England. The grotto at Pain's Hill is considered his *chef-*

d'œuvre; and next to it ranks the one at Oatlands, which the grotto at Wimbledon resembles in general character. Entering an open grove of forest trees, we next come to a light iron bridge, passing over which, we noticed an immense pollard oak some centuries old, covered with ivy, and a very large Magnòl*ia* acuminàta, which was an imported plant, and brought from America by the botanist Fraser. Here are, also, *P*inus serótina, and some other American trees, which were planted here when they were first introduced into England. From this open grove, which is situated near the largest piece of water, the stranger may either proceed to the gardens and farm-buildings by an open path directly through the park, or by a circuitous course in the boundary plantation, which forms two sides to the arable land. Arrived at the farmery and the poultry-yard, their details will be found remarkably complete, as the plans and descriptions which we have already given will prove. The kitchen-garden is chiefly remarkable for producing excellent crops; but the grand feature of the place, in a gardening point of view, is the flower-garden, which occupies upwards of three acres, and contains above 200 beds of flowers. These beds are of different shapes and sizes, and they are scattered over the surface with very little regard to regularity or symmetry; the object, apparently, being to get as many beds as possible into the given space, allowing a small strip of grass between them, in order to keep them distinct, and to admit of walking round them. In point of general design, therefore, this flower-garden has nothing to recommend it; but, from the great number of beds, and almost endless variety of the kinds and colours of the flowers they contain, it presents a dazzling surface, of the most brilliant colours, mingled together in confusion. This garden is admirably managed by Mrs. Marryat's gardener, Mr. Redding, who keeps an ample stock of plants in pots, in order that, as soon as one crop of flowers begins to fade, the plants may instantly be removed, and replaced by others just coming into bloom. The number of species cultivated in this garden exceeds 750, exclusive of varieties of florist's flowers, such as dahlias, hearts-eases, tulips, &c. The first appearance of gaiety in this garden usually commences in February, with the appearance of crocuses, snowdrops, primroses, and Russian violets. In March, to these are added narcissi of various kinds, numerous species of *S*cílla, and other early bulbs, together with *S*axífraga oppositifòlia; and, in April, the different varieties of hyacinth make a splendid show, and perfume the garden with their fragrance. Primroses, double and single, *A*rabis, Aubriè*tia*, *A*lýssum, *O*robus, the common wallflower, and a number of other plants, produce a brilliant effect during this month; and, from this period, the brilliancy and beauty of the garden never fades during the whole of the summer. In the autumn, the last flowers are those of the dahlia, some of the Mexican and Californian annuals, and the chrysanthemum; and, after these are removed, in consequence of being blackened by frost, the garden depends for its beauty during the winter on the evergreen flowering shrubs, such as *A*rbutus, laurustinus, *E*rìca, *D*áphne, &c.; on the beds of evergreen herbaceous plants, such as pinks, carnations, saxifrages, sweetwilliams, &c.; on the green turf, on the rich yellow gravel, on the clear water, and on the state of neatness in which the whole is kept.

491.—*Wire fence.*—As the park abounds with hares and rabbits, it is necessary to inclose the flower-garden on the sides next it, and the mill paddock, with a wire fence, hare-proof; and this fence is so artfully concealed among

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View from the Grotto at Wimbledon House.

the shrubs, as scarcely anywhere to be seen, except at the two entrances to the garden, where there are, of necessity, hare-proof wickets.

492. *The whole management of the park, gardens, and farm*, is committed to Mr. Redding, who is an example of a most judicious, careful, and suc-

cessful farmer, as well as gardener; two pursuits which, considering the great number of plants in the flower-garden and green-houses, one would think almost incompatible.

493. *Remarks.*—There is a simplicity, combined with a certain degree of grandeur, in the view from the lawn front, which makes a considerable impression on the stranger. The most complete parts of this residence are the dwelling-house and domestic offices, and the farm offices. The latter are neither regular nor symmetrical; but they are designed on the best principles; they are quite suitable for a small farm where the object is the consumption of the produce, and they are substantially executed; circumstances which show that neither regularity nor symmetry is an essential ingredient where the main object is use. The relative situation of the farm-yard, poultry-yard, kitchen garden, and back courts to the flower-garden, is also good; and, though there is no convenient connection, within the grounds, between these and the stable offices, this is rendered comparatively unnecessary by the situation of the public road. The ground plan of the house is well calculated both for splendour and habitableness. The dining-room and drawing-room are spacious rooms, admirably connected, and yet sufficiently calculated for display in passing from the one to the other. When the family are alone, there is a sufficient number of smaller living-rooms to serve the purpose of a dining-room, drawing-room, &c., for more than a dozen persons; without using the principal rooms. The grand central passage through the house being broad, and well lighted both from the ends and the roof, is also a great source of comfort and convenience; as are the domestic offices, from their extent and number.

Design XXXI.—*A villa, of from* 50 *to* 100 *acres in the geometrical style.*

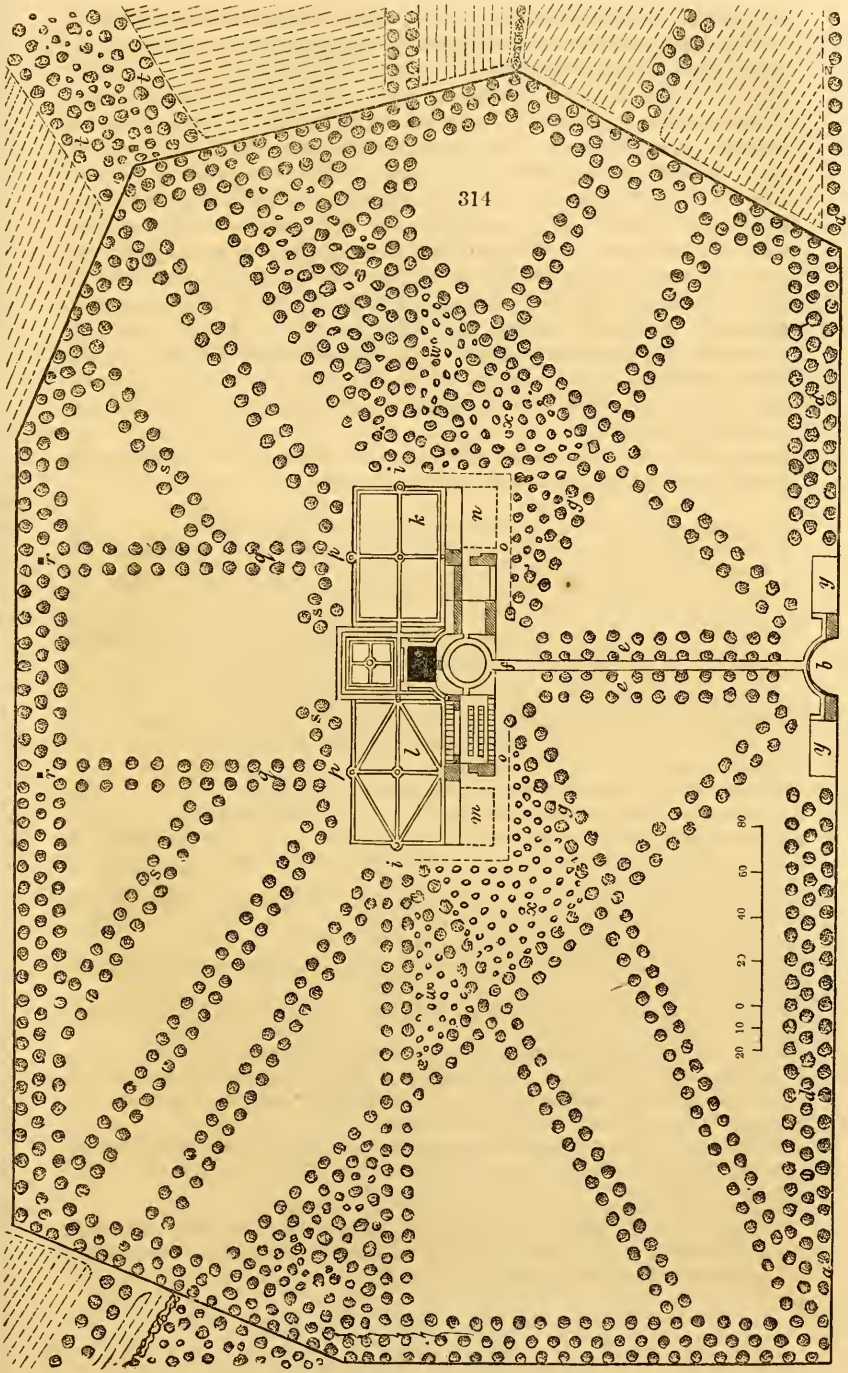
494. *General observations.*—We have given this design, to show how the ancient style of laying out grounds can be adapted to modern uses. We have repeatedly observed that we are not among those who consider the ancient, or architectural, style of laying out grounds as fit only for the ages in which it first appeared; and that, on the contrary, we consider it as much a style among other styles of landscape-gardening, as the Gothic is among other styles of architecture. The suitableness of this style for a country in a wild state must, we think, be obvious to every unprejudiced mind, from the contrast which its clearly defined lines and forms afford to the irregularity of the surrounding scenery, and from the obvious expression of art and refinement which they produce. In travelling over a flat country, like great part of the interior of Poland, which may be described as one interminable forest (the cultivated lands and pastures being merely extensive glades), it is delightful to arrive at a post-house with a walled garden, and perhaps a field or two enclosed by clipped hedges. In the neighbourhood of Moscow, the greater part of the country residences are, or at least were in 1814, laid out in the geometrical style, and the principal things that were admired in them by the inhabitants were the long straight avenues and walks, bordered by clipped hornbeam hedges of great height; and the immense spruce fir hedges, which were found in other parts of the grounds and near the mansions. The geometrical style, besides being suitable for all countries not regularly lined out by walls and hedges, and cultivated in regular fields or ridges, is also in an eminent degree adapted for public gardens and parks, in which masses of people, or of horses and carriages, are to congregate together. If the reason

be asked why straight walks, avenues, and formal lines of plantation, are more suitable for places of public resort than the circuitous walks, scattered groups, and single trees of the modern style, the answer is, that such straight walks and broad avenues are better adapted for displaying crowds of people, and long cavalcades of horses and carriages, to advantage; and that the great object of those public walks is display. Such scenes are not for solitude, says Byron, speaking of the gardens of Versailles; and the truth of this remark must have been felt by every one who has seen such gardens. We do not say that it is necessary for all the walks of a public garden to be straight, and all the trees in rows, or in formal masses; we merely take these features as characteristic of the style, freely allowing that, when the curves of roads and walks in the modern style are so large as to present large portions of them to the eye at the same time, the effect comes to be nearly the same as in the geometrical style in its utmost rigour. Hence, the somewhat curved roads in the Regent's Park, and in Hyde Park, in London, are nearly as effective in displaying the company assembled in them as the straight roads in the Mall in St. James's Park, in the avenues in the Champs Elysées in Paris, and in the walks of the gardens at Versailles and Schönbrunn. It will be recollected, however, that the walks and roads in all the places mentioned, from their comparative straightness, belong more to the geometrical than to the modern style. To pass from carriage-drives to walks adapted solely for persons on foot, if we take a review of all the public gardens in Europe, we shall find that the most effective display, on holidays, is always made in broad straight walks: for example, in the broad north and south walk in Kensington Gardens; in the broad avenue through the Regent's Park, opposite Portland Place; the broad walk opposite the Luxemburg, in Paris; that opposite the palace of Schönbrunn, near Vienna; and those in the gardens of the summer palace, in St. Petersburg. The truth is, that the modern style is essentially calculated for solitude and retirement, while the geometrical style is especially calculated for publicity and display. The numerous windings of the walks in the modern style, and the various groups into which its woods are thrown, occasion, to a spectator walking along them, a perpetual change in the scenery, and never allow masses or long columns of people to be seen at once. Every thing connected with the ancient style has exactly a contrary effect: there can be no privacy in straight avenues.

495. *Adaptation of the geometrical style to modern residences.*—Since then the geometrical style is chiefly adapted for an unenclosed or wild country, and for public parks or gardens, on what grounds, it may be asked, is it recommended for suburban residences? Our answer is, to accommodate the taste of particular individuals; to introduce as a contrast to suburban residences in the modern style; and to suit newly peopled, and thinly inhabited countries, such as the back settlements of America or Australia. Besides these reasons, which refer to what may be called the relative beauty of the style, we contend, that it has some positive beauties, which are peculiarly its own, and on which account alone it deserves occasionally to be introduced. Among these are, the grandeur of its avenues, and the consistency with which this expression is maintained throughout a whole place; the masses of light and shade which are produced by these avenues; the succession and uniformity of the trees which compose them; the idea of distance given by their lengthened vistas; and the feeling of shelter and protection which intersecting

avenues and rows of trees always produce. To these beauties ought to be added those of the scenery in the immediate vicinity of the mansion, the terraces, the embroidered parterres, the fountains, the statues, and the comfort produced by the near vicinity of the kitchen-garden. Taking both the ancient and the modern styles, however, and examining them impartially, we readily allow that much more variety and interest can be created by the latter style than by the former; and, further, that the modern style is better adapted to modern circumstances, not only on account of the contrast which its lines and forms produce to the lines and forms of a country everywhere cultivated, but on account of its affording more ready means of displaying the numerous foreign trees and shrubs, which at the present day are become comparatively common in the gardens of temperate climates. We shall now describe the plan before us.

496. *Ground plan, &c.*—Passing along the turnpike-road (*a a* in *fig.* 314.) indication is given of a gentleman's seat by the triple row of trees within the boundary wall. Arrived at the point *b*, we there find an open iron gateway, in the centre of a semicircular wall; and, looking through the gateway along the avenue, we observe at its further end a lofty square house (the mansion) on a raised basement. Between the centre gateway and the lodges on each hand, there are two openings of the same width as the gateway; and, like it, they are filled in with ironwork, so as also to resemble gates. Through these the eye looks along the avenues *c c*, which are well calculated to give an idea of extent. After passing through the gates, if we look to the right and left, we see the avenues at right angles to the approach avenue (*d d*), and, on each side of the avenue leading to the house, the side avenues (*e e*). The centre avenue has a broad gravel road, but all the other avenues are in grass. Arrived at *f*, which is the entrance to the court of honour, if we look to the right and left, we have the avenues *g g;* though these are chiefly calculated for making an impression on a stranger when he comes out of the court of honour on returning from the mansion. Having passed through the court of honour (*h*) (in the centre of which is a statue, a sun-dial, or an obelisk), and also directly through the hall of the house, we descend the steps from the platform on the garden front, and arrive at a terrace walk, which extends on each side as far as *i i*. Directly in front, there is an ancient parterre, with a raised terrace walk round it. On the right is the kitchen-garden (*k*); and on the left, the bosquet (*l*), which is analogous to the modern shrubbery. To the north of the bosquet, there are a conservatory, summer-room, frame-ground, and reserve-garden (*m*), all of which will hereafter be explained more in detail; and, to the north of the kitchen-garden, there are the stable offices, cow-yard, poultry-yard, laundry, and drying-ground (*n*); as will also be hereafter more fully explained. There are the back roads (o o) to the offices, gardens, &c., proceeding from the main approach at *f;* so that no servant need ever have occasion to cross the court of honour, except when in attendance on his master, or to open the court gates. From the points *i i* and *p p*, and from the walks in the kitchen-garden, and in the bosquet, leading to these points, vistas are obtained along the avenues in the park; which are shown by the plan so distinctly, that it is unnecessary here to enter into further details. Two of these avenues (*q q*) are shorter than the others; but, to direct attention from this circumstance, which would show the boundary fence rather nearer than is desirable, obelisks are placed near their termina-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tion, at *r r*. Two other avenues (*s s*) are interrupted, by omitting the lines of trees in that portion of them which would pass the front of the house, and would have obstructed its view; but this interruption will not materially injure the effect from the points *p p* in the kitchen-garden and the bosquet. Certain avenues are carried through the arable lands exterior to the park or paddock, in order to show that the proprietor's property extends on every side. At *t t*, these avenues border the natural wood; but, in the other places, they are carried through the middle of corn-fields, the ground under the trees being kept in grass. At *v v* are woods, that is, standard trees, with coppice-wood beneath them for the protection of game; at *w w* are hop-grounds; at *x x*, orchards; at *y y*, gardens to the entrance lodges (not shaded by the trees of the avennes, as such gardens too frequently are, but fully exposed to the south); and at *z* is a single row of trees, which is carried along the public road as far as the property extends. The farmery in this design is supposed to be situated on the opposite side of the road, and is not shown in the plan; but several of the arable fields belonging to it are seen on the east and west boundaries of the park.

Fig. 315. shows the house, gardens, and offices of the residence just described, on a larger scale than in the plan *fig.* 314.

a, The court of honour, with three gateways, and an obelisk in the centre.

b, The stable-court, on the northside of which are a six-stalled stable, harness-room; with groom's sleeping-room over, and two coach-houses; and in the north-east angle there is a turret with a clock, a corresponding turret being formed on the opposite side of the court of honour. *c*, Cow-yard.

d, Open shed, for roots and other food for the cows in winter, and where calves or a pig may be fattened, and one or two donkeys kept.

e, Cow-house for five cows.

f, Wash house, with laundry over. *g*, Fruit and root-room.

h, Banqueting-room, or summer-house, for eating fruit in, with rooms on the first-floor. A cistern for supplying the fountains is immediately under the roof.

i, Poultry-yard. *k*, Kitchen-court.

l, Drying-ground, in the north-west angle of which is a pigeon-house.

m, Reserve ground for the kitchen garden. *n*, Kitchen-garden.

o, Grand terrace walk, from which there are several flights of steps; one ascending to the house terrace, one descending to the flower-garden, one descending to the kitchen-garden, and one descending to the bosquet.

p, Basin and fountain, in the centre of the flower-garden; the fountain, supplied with water from a cistern on the roof of the house.

q, Terrace, or platform, on which the house stands.

r, Veranda, or way covered with a glass roof, which leads to the conservatory and the summer room (*t*).

s, Lobby to the conservatory, communicating with a back room, the forcing-ground, and a water-closet.

t, Summer room, which may either be a museum, a room for pictures or statues, a room for reading in, a school-room, or a banqueting-room. On the first-floor are rooms for books or pictures; and immediately under the roof is a cistern for supplying water to the bosquet, the conservatory, and the forcing department.

u, Back sheds to the conservatory and potting-shed, and work-rooms for the forcing-ground.

v, Forcing-ground, with two pits, and, at the back, a vinery, peach-house, and house for pines and grapes.

w, Gardener's house, and two rooms for lodging under-gardeners.

x x, Reserve-ground for the flower-garden and the flower-beds in the bosquet; having, in the north-east angle, a pigeon-house, or a house for peacocks, to correspond with the pigeon-house in the drying-ground.

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y, Four compartments in the bosquet, one laid out as an ericetum, another as a rosarium, a third as an American garden, and the fourth as a flower-garden.

z, The four principal compartments of the bosquet, planted as an arboretum; the largest trees being placed adjoining the central walks, and the smallest shrubs bordering the four side walks. In the ancient style, when there were not above a dozen kinds of trees and shrubs in cultivation in any garden in Europe, the walks of the bosquet were bordered by hornbeam or yew hedges, kept regularly clipped; and the interior of the compartments was kept full of wood, of the kind most abundant (often of the common hazel, for the sake of the nuts), but cut so as never to rise higher than the hedges which bordered the walks, and often cut quite level on the upper surface. Hornbeam was in most common use for bosquet hedges; but the yew was occasionally employed for the same purpose, both in France and England; and, in Italy, the phillyrea and the ilex, or evergreen oak.

1, Boundary fence on the south, east, and west sides of the bosquet, the flower-garden, and the kitchen-garden, supposed to be a sunk wall, rising 4½ ft. above the surface, on the side next the bosquet, and showing a sloping ditch on the other side, like that of the modern sunk fence.

2 2, Portions of the boundary fence, both of the bosquet and the kitchen-garden, formed of open iron palisading, in order that spectators within may see along the avenues in the park. 3 3 3, Commencement of the avenues.

4 4 4, Terrace walk surrounding the flower-garden, to which there are four descents by flights of steps. The fountain in the centre may consist of a group of allegorical figures, which will not only be in harmony with this style of gardening, but will require a smaller quantity of water, and less elevation of fountain-head, to produce an effect, than where a single columnar jet is employed.

5, A covered way, the roof being glazed, with creepers underneath, to correspond with the veranda (*r*). Underneath this covered way there are two passages; one to the kitchen and other under-ground offices (which are all lighted from windows, only half the height of which is above the level of the platform), and the other up a flight of steps to the terrace; the object of this last passage being to admit of the master or mistress descending to the kitchen-court (*k*), and thence to the poultry-court (*i*), and to the fruit-room, banqueting-room, &c., by the most direct mode.

6 6, Situations for sun-dials. 7 7, Situations for statues.

8 8, Situations for obelisks.

9, Peach and fig wall, 12 ft. high, with broad border.

10, Conservative wall, 12 ft. high, with a narrow border.

11, Conservative border, for Cape bulbs, in front of the conservatory.

12, 12, Holly hedges, 10 ft. high, with stone piers, surmounted by vases, at the doorways, angles of intersection, &c. For the holly hedges, brick walls may be wholly or partially substituted, and covered with fruit-trees or ornamental shrubs.

13 13, Stone piers, surmounted by vases.

Fig. 316. is a slight sketch, showing a bird's-eye view of the whole place.

497. *Remarks.*—In this design we have purposely omitted a feature common in the geometrical style; viz., a moat of water round the house, offices, and gardens; and the reason we have done so is, that we suppose the situation to be flat in a flat country, and, consequently, that so much stagnant water would be unwholesome. In many cases, also, a broad straight canal would, in ancient times, have been carried on from that part of the moat which was in front of the flower-garden to the boundary of the park; and this also we have omitted for the same reason. The bosquet, in some cases, would have had one of its compartments laid out as a labyrinth, which we have not shown, because we prefer devoting the whole of the bosquet to a collection of trees and shrubs. We would not, however, omit the labyrinth, not only because it is one of the features of the style, but because we observe that in those few places where labyrinths at present exist in England, they are always great

sources of amusement to the young people who are allowed to visit the grounds. Every one who has been at Hampton Court will recollect the labyrinth there, which is open at all times to all the world, and is the source of perpetual amusement to the public. There is also a very well kept labyrinth at Chevening, the seat of Earl Stanhope, where the grounds have been laid out by the present earl, chiefly in the ancient style, and in very correct and appropriate taste; and where, with an example worthy of imitation, they are at all times open to all the public. A labyrinth of hornbeam hedges might be introduced at *w* in *fig.* 314. in p. 447, instead of one of the hop-grounds. The woods *v v*, in the same figure, might be cut into alleys, stars, and *pattes d'oie;* and it would not be inconsistent with this style, if the two side avenues (*c c*) terminated in obelisks. Directly in front of the house, in the boundary row of trees, or immediately within it, a column surmounted by a statue, or an obelisk, might be placed, as an object from the house, and to divert attention from the boundary fence.

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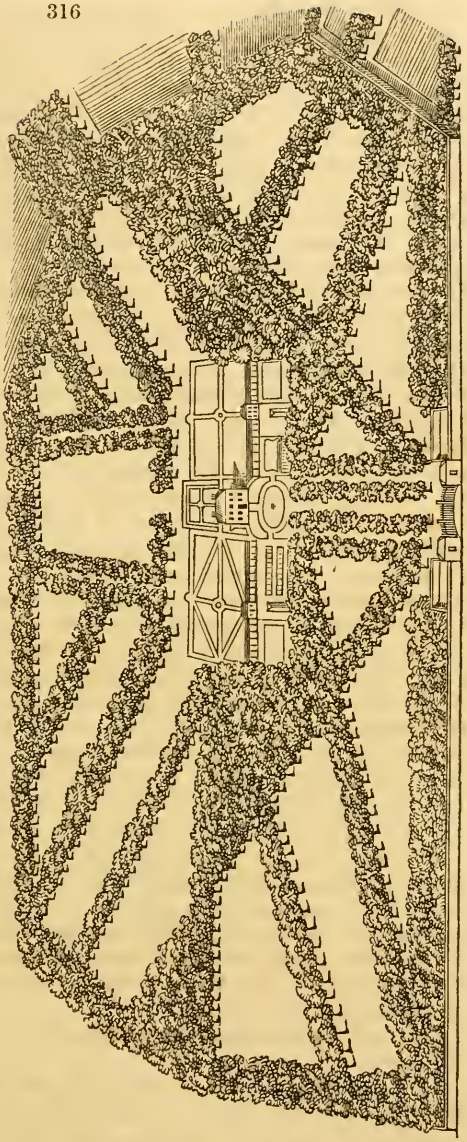

498. *The park is thrown into compartments* by the intersections of the avenues; but, as no hedges or walls are supposed to exist within it, there is a free range for animals and sportsmen over the whole. If, however, it should be desired to make the most of the pasture, by grazing it with cows or sheep,

the compartments might be separated, in the direction of the lines of trees, by hurdles, which, joined to the trunks of the trees, and partially concealed by their heads, would not be in the slightest degree offensive to the eye. In planting these avenues, there are only a few kinds of trees that could be employed; such as the oak, elm, beech, sycamore, horse-chestnut, sweet chestnut, and a few others. Some might prefer planting the whole with the black Italian poplar, which would produce a splendid effect in ten years after planting; others might prefer the Lombardy poplar, which would also soon produce a striking effect, and which would do very little injury to the pasture below. The young trees should, if possible, be procured from the nurseries with clear stems, not less than 6 or 8 feet high, and not less than 2 in. in diameter at the collar. To insure the possession of plants of this size, it may be advisable to order them a year or more beforehand, or to procure them, and rear them in a private nursery in the ground, till they are sufficiently large for planting out. Whichever mode is adopted, it must be borne in mind that all the trees of the same kind intended for avenues must be of the same size, and of the same vigour of growth, when planted where they are finally to remain; and, also, that no more than one kind of tree can be planted in each avenue. The reasons for these dicta are sufficiently obvious; viz., to insure uniformity of progress and appearance in every part of each avenue. For the same reason, the soil, in every part of an intended avenue, must be trenched, or otherwise prepared, to the same depth; and, by the addition of manure or compost, rendered everywhere of the same quality. The trees, after being planted on little hillocks, may be protected in Mr. Lawrence's manner, already described (p. 265.); or, if it be considered less expensive, each avenue may be enclosed by lines of fencing along its exterior sides. The kitchen-garden will be in strict accordance with the ancient style if surrounded by a hornbeam, beech, holly, or yew hedge; but stone and brick walls were also used in this style, and, in modern times, will doubtless be preferred, on account of the facilities which they afford of growing the more delicate fruits. No slip is shown round the kitchen-garden, because, in the plans, the boundary fences are hedges with stone piers; but the introduction of a regular slip round the walls of the kitchen-garden has nothing in it inconsistent with the geometrical style, and may therefore be adopted at pleasure. The compactness of all the garden scenery in the design before us, and in the geometrical style generally, is attended with some economy in management, because the whole is more immediately, and at all times, under the eye of the master, every part being overlooked from the window of the house; and it may also be more conveniently examined by the female part of the family and by invalids.

Design XXXII.—*Kenwood, the Seat of the Earl of Mansfield, at Hampstead.*

499. *General observations.*—This is, beyond all question, the finest country residence in the suburbs of London, in point of natural beauty of the ground and wood, and in point also of the main features of art. The park may be said to consist of an amphitheatre of hills; the house being situated on one side, backed by natural oak woods rising behind it, and looking across a valley, in which there is a piece of water, to other natural woods, also chiefly of oak, which clothe the opposite hills: and which, combined, give the name to the place; *ken*, being derived from *kern*, the ancient British

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View on entering the Gates at Kenwood.

name for an acorn. In consequence of this natural disposition of the grounds, and of the woods, all exterior objects are excluded; and a stranger walking round the park would never discover that he was between Hampstead and Highgate, or even suppose that he was so near London. It is, indeed, difficult to imagine a more retired or more romantic spot, and yet of such extent, so near a great metropolis. This impression is felt the moment we enter the gates, and proceed along the approach, in a hollow between deep banks, rendered dark by overshadowing trees, as shown in *fig.* 317. The impression is not lessened when we come within sight of the house, a part of the entrance

front of which is represented in *fig.* 318.; or when, passing through a walk covered with trellis-work, in the flower-garden, to the lawn front, we look down the declivity to the water, at the foot of the rising woods on the opposite bank, as shown in *fig.* 319. Kenwood is one of those places of which but a very imperfect idea can be given by a ground plan, and little more than some notion of the inequalities of the surface, by geometrical sections of the ground, and sectional views. The beauty of the oak trees, and the simple and sylvan grandeur of the scene, can only be represented by landscapes on a tolerably large scale; or best of all by a panoramic view, taken from a central point in the lowest part of the grounds.

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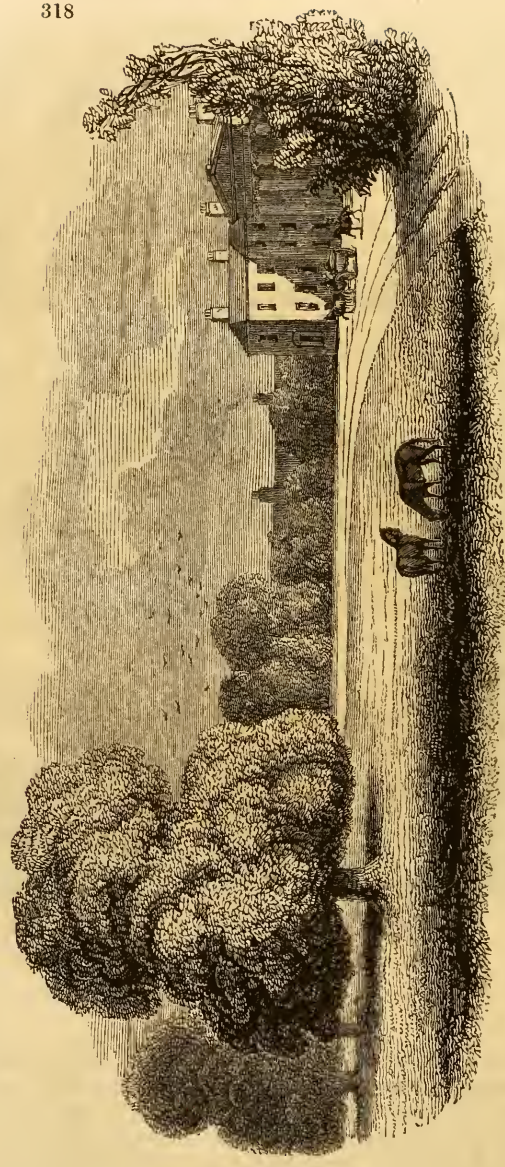

View at Kenwood, looking towards the House.

500. *The ground plan* (*fig.* 320.) is taken from a published map of the parish of St. Pancras, in which the property lies, with some additions, trees, &c., from memory. The sections (*figs.* 321. to 325.) are also from memory; but the views (*figs.* 317. to 319. and *figs.* 326. to 328.) are faithful copies from nature. The sectional views are far from doing justice to the beauty of the scenery, but these, together with the views, may serve to convey to the reader some general ideas

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of the style of beauty which prevails in the grounds at Kenwood. Proceeding from Hampstead on the road towards Highgate, at the end of Hampstead Heath, we arrive at the tavern known as the Spaniards (*fig.* 320. *a*), where the Kenwood property commences. Here there is a considerable descent along the road, while the ground on the right-hand rises gently, and that on the left falls considerably. At *b* is a lodge, which leads to the farm offices, which are in the form of an octagon, and were built from a design given by a celebrated agriculturist, Marshall. The arable farm lands lie chiefly on the opposite side of the road. At *c* is the principal approach to the mansion; and at *d* there is another lodge, which may be called that of the Highgate approach, and also that of the road to the domestic and stable offices. The following are further details of the plan :—

e, The house.
f, The domestic offices.
g, The gardener's house.
h, The stable offices.
i, The kitchen-garden.
k, The flower-garden.

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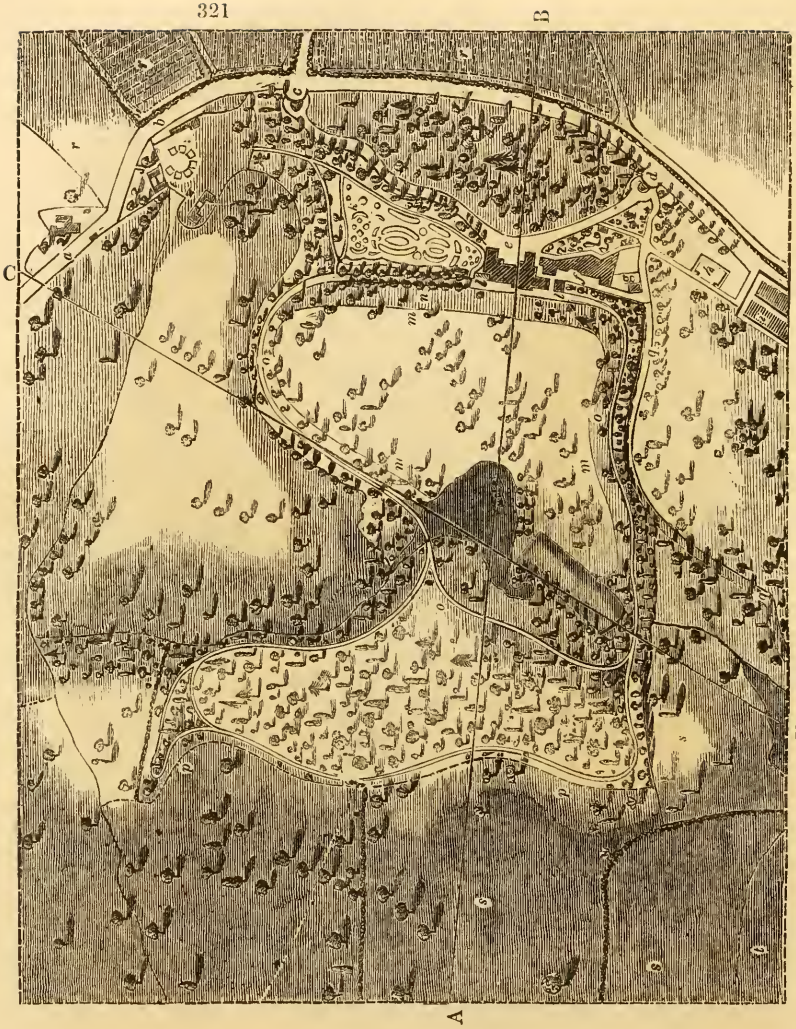

l l, Terrace walk.

m m m, Wire fence, separating the mown ground from the sheep pasture.

n, Lime-tree avenue, through which the terrace walk passes.

o, Main walk, from no one point of which is any object seen that does not belong to the woody scenery of the park.

p p, A broad terrace walk of turf, or rather moss, overhung by immense trees, on the outskirts of the park, and from some points in which magnificent views of London are obtained.

q q, Private approach road, commencing in Kentish Town, and continued upwards of two miles entirely through the Kenwood property. This approach, if widened, and properly planted, would form the noblest avenue to a gentleman's seat in the neighbourhood of

Section and Sectional View of the Grounds at Kenwood, on the Line A B, *looking to the North.*

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Section and Sectional View of the Grounds at Kenwood, on the Line B A, *looking to the South.*

London, and come nearer to the magnificent idea of the Duke of Chandos, of having a straight avenue from Chandos House, in Cavendish-square, to Canons House, near Edgeware, than any other that we have heard of.

r, Arable lands occupied as the home farm. *s*, Grass lands let on lease.

t t, Ponds, supplied from the ponds in the park.

Fig. 322. Section and sectional view on the line A B in the plan, looking to the north.

Fig. 323. Section and sectional view on the line B A, looking to the south.

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Section and Sectional View of the Grounds at Kenwood, on the line C D, looking from the House.

Fig. 324. Section and sectional view on the line C D, looking from the house.

Fig. 325. Section and sectional view on the line D C, looking towards the house.

501. *The house, the kitchen offices, and the flower-garden,* stand on a nearly level platform, which is gradually united to the rising ground on the approach side, and terminates on the lawn front, in a broad terrace walk, which is carried along the brow of an artificial slope, slightly indicated in the plan. This terrace walk is one of the finest artificial features of Kenwood. It is 20 ft. wide in front of the house; and this width is continued both to the right and left, as far as the walk remains in a straight line; it then becomes imperceptibly narrower, till, in the lowest parts of the grounds, where it passes the ponds of water, it is no more than 8 ft. wide; and it is continued at this breadth through the woods. In consequence of this terrace walk being so much above the wire fence which separates the mown ground from the pasture ground, the fence is never seen till we begin to descend the declivity, when a good impression having been made by its absence in front of the house, it is not in the slightest degree offensive. Indeed we scarcely ever knew a place where, om the existence of so high a terrace, there was so slight an appearance of fencing or confinement. But the great value of Kenwood to a landscape-gardener is the perfect unity of expression which prevails in the views obtained in every part of the grounds. These views, though all are equally decided in expression, are of three distinct kinds: first, the views from the entrance front of the house along the approaches, and those along the approaches to the entrance front; secondly, the views in the flower-garden, which is surrounded by trees on every side except that next the house, and the views in which are, consequently, confined to flowers and flower-beds; and, thirdly, the views from the lawn front of the house to the grounds, and from the grounds to the lawn front, in which there are no flowers to be seen. If it were desired completely to spoil the characteristic beauty of Kenwood, as far as could be done without removing any of the trees, the way would be to place beds of flowers along the terrace walk, and

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Section and Sectional View of the Grounds at Kenwood, on the line D C, looking towards the House.

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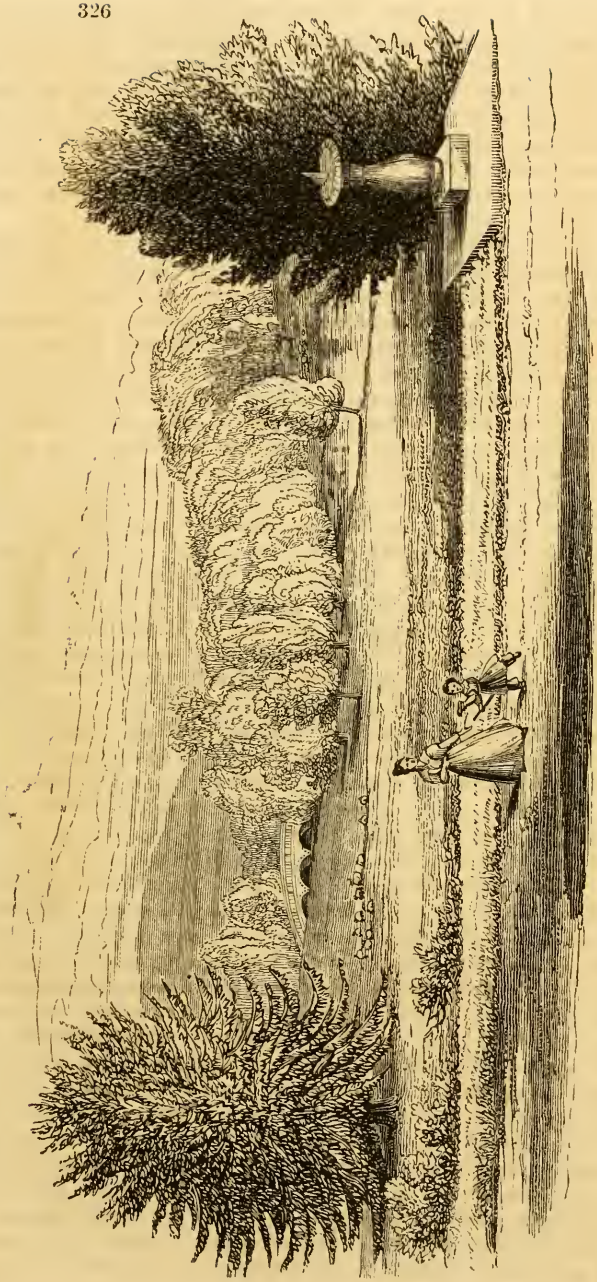

View at Kenwood, from the Terrace Walk near the House.

on each side of that walk, from the commencement of the terrace to the end of the wood. It argues great good taste in the proprietor that this has not been done; for nothing can be more natural than for a gardener, who wishes to make the most of the pleasure-ground, to think of doing so by adding more flowers. A person must have acquired some feeling for general effect, before he can fully understand where flowers will be useful, and where they will be injurious in a scene. *Figs.* 326. and 327. are views of the grounds from the terrace walk near the house; and *fig.* 328. is a view of the house from the main walk in the bottom, near the water.

502. *When flower-beds may be introduced on the lawn front, and when they are better omitted.*—There are some places where the scenery, as viewed from the lawn front of the house, has little or no natural expression or character, and cannot be made to have any by the proprietor, either in consequence of a flat surface, or of the intervention of other property. There are other residences, in which the view from the lawn front is so confined, that it scarcely can be made to form a whole; and some, where, from offensive objects, the view from the lawn front may be positively disagreeable. In these and similar cases, that is, wherever there is no marked expression, or an indifferent or bad expression, flowers and flower-beds may be introduced in the foreground of the lawn front. On the other hand, wherever the view from the lawn front has a decidedly marked expression that is agreeable, whether by its grandeur, its picturesque beauty, or its peaceful rusticity, flowers in the foreground ought to be avoided. As examples of what may be called grand views from the lawn front, we may mention Syon House, in the neighbourhood of London; and, if we recollect the situation correctly, Dreghorn Castle, in the neighbourhood of Edinburgh. As an example of picturesque beauty, none that we know of, in Britain, can be compared to Redleaf, the seat of the late William Wells, Esq.; and, as an example of peaceful sylvan beauty, nothing can surpass Kenwood. There are many places in the neighbourhood of London in which flower-beds are placed immediately under the drawing-room windows, where they would be much better omitted; and others, where, though they may not be required, and are not introduced, they might be so without destroying any expression better than that which they would give; but, on the contrary, creating an interest, which could not be given by any other means. Bedford Lodge, Camden-hill, may be referred to as an example of the use of beds of flowers on a small scale; and Chevening, in Kent, as a similar example of their judicious employment on a large one. It may be laid down as a general principle, that it is always more or less dangerous to introduce flowers in the foreground, when there is an extensive distance as a termination to the view; and, on the contrary, that where there is little or no distance, and a view limited in extent, flowers may generally be safely introduced. To avoid error in these and other similar matters, a person must either have studied the subject so far as to be able to exercise his reason on it, or he must have a natural feeling or taste for the beautiful in landscape. These remarks will not be without their use, if they induce persons to think before they introduce flowers into particular parts of pleasure-grounds where no flowers have been before; and to examine whether flower-beds already existing might not be better removed. It has often struck us with surprise, that the proprietors of the finest residences in England, noblemen and gentlemen of high education and refined taste in other things, possessing collections of

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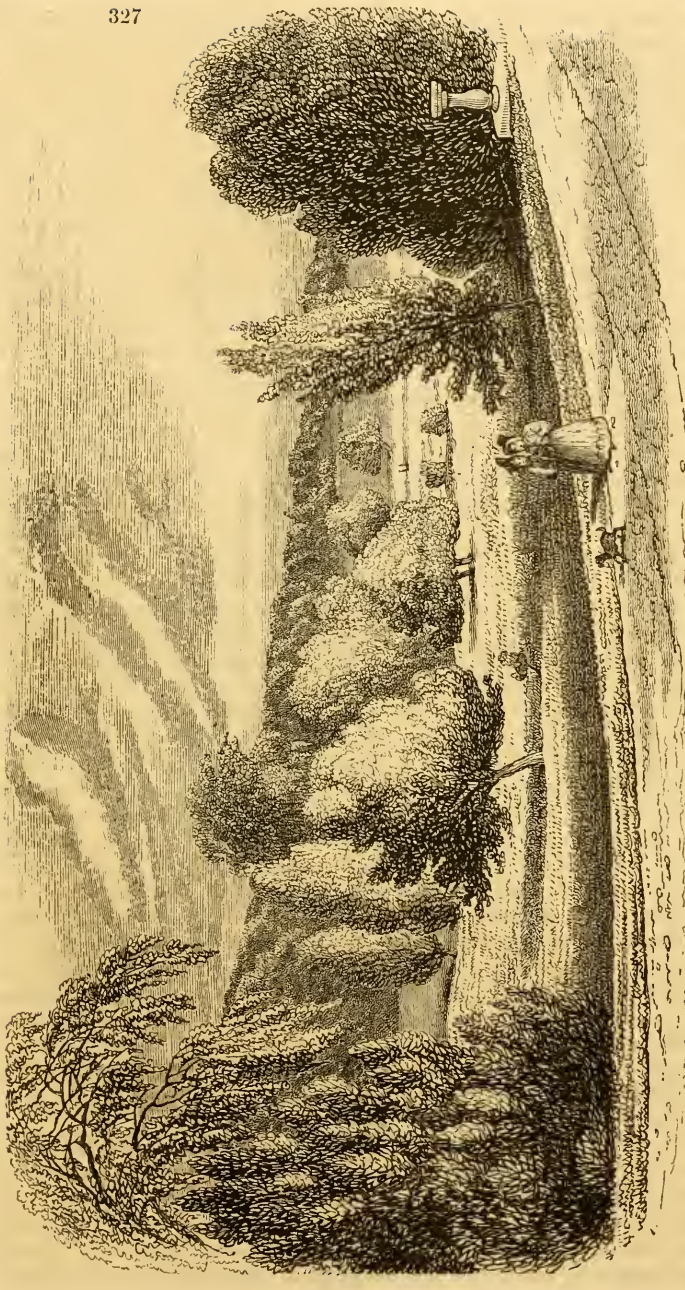

View at Kenwood, from the Terrace Walk near the House.

the finest pictures, and whose eyes must consequently be familiar with all that is noble and beautiful in landscape, should yet commit the laying out of their grounds to their gardeners; or, at all events, permit them to make alterations and additions in whatever relates to flower-beds, flowering shrubs, and rockwork; forgetting that the life of the gardener has been devoted to the study of the culture of plants, and not to that of the composition of forms, and their effect in landscape scenery. Hence it is that many of the most beautiful places in England are at this moment disfigured by flower-beds, either placed where there ought to be none, or put down of such shapes, and in such a manner, as neither to form a whole among themselves, nor with the other objects near them. How rarely do we find pieces of rockwork, or rocky cascades, in England, which a man who had profited by the study of pictures could take pleasure in looking at? It is clear to us, that the possessors of pictures in general derive very little benefit from them, as regards the improvement of their taste in landscape. How few landed proprietors can, like the late Sir Uvedale Price, and the late William Wells, Esq., of Redleaf, transfuse the spirit of the finest landscape into the artificial scenery which they create in their grounds? Many country gentlemen are in the habit of having artists at their houses, to take portraits, views, &c.; and these being, in many instances, the guests of the family for weeks together, we often wonder how it happens that they do not point out the grosser errors of want of connection and unity of expression, with which they must so frequently be shocked in passing through flower-beds and pleasure-grounds; but we suppose that gentlemen do not think of asking the opinion of a landscape-painter on any point connected with gardening; forgetting that the composition of forms is the business of the landscape-painter, and that his eye has been educated by a long course of study and observation, so that he can detect what is right or wrong at a single glance. There are some proprietors who have studied the subject themselves, or who, fortunately knowing their own ignorance of it, have had the wisdom to consult such artists as Gilpin, Nesfield, &c.; and we only wish that those who do without such aid could see their places as they are seen by men of real taste. To return to the subject of flowers and flower-beds, we may remark that the flower-garden at Kenwood is the only defective part of the place. It is naturally shaded and confined by a lofty lime-tree avenue on the one hand, and by a rising hill of oak wood on the other; and the area of the garden contains by far too many small trees and shrubs among the flowers: in consequence of this, the turf is almost always damp on the surface; and the flowers come up with slender and etiolated stems, and pale colours. Most of the flower-beds, also, are too large; and they do not combine so as to form a whole. Were it ours, we should clear the whole area, and lay out a new combination of figures, chiefly along the centre, planting them solely with flowers, and keeping between them and the boundary a broad margin of turf, so as to insure that airiness, dryness, and sunshine, which are at present so much wanted.

503. *The variety of trees and shrubs in the grounds at Kenwood* is not very great; nor is it desirable that it should be so, except in the more secluded parts of the place, where they would not interfere with the general effect. Adjoining the flower-garden, and bordering a walk which leads from it to the dairy and farm, a number of new species of ligneous plants have recently been introduced, and a small pinetum planted. This walk, from the botanical

Kenwood House, from the main Walk in the Bottom, near the Water.

variety which it exhibits, forms an agreeable contrast to the main walk on the lawn front of the mansion, though along that walk, also, there are a few very fine specimens of foreign trees and shrubs. Of some of these; such as a cedar of Lebanon, which, in 1836, was 90 ft. high, and which was planted by the celebrated Judge Mansfield, with his own hands, about ninety years before; a larch of the same age and size; and a Robínia Pseùd-Acàcia; we have, with the permission of the present earl, given portraits in our *Arboretum Britannicum*. The oak woods, which are probably the oldest about London, are remarkable for being composed almost entirely of Quércus sessiliflòra.

504. *The farm and farmery* are conducted in the Scotch manner, under a Scotch bailiff, who raises admirable crops of turnips, potatoes, and clover, the soil being a deep sandy loam. Lupìnus polyphýllus has been tried here, as an herbage plant, with success.

505. *Remarks.*—Kenwood, being at no season of the year shown to strangers, we regret to think that so few of our readers will have an opportunity of studying there the effect of unity of expression in landscape, and of feeling the powerful impression made by scenery so decidedly simple, rural, and sylvan, in the immediate neighbourhood of London. The contrast is powerfully felt, not only between this place and a crowded city, but between it and the extreme artificialness of most other suburban residences. Gardeners, however, can always visit gardeners, and they may profit from perusing these remarks, and comparing them with the impression made on them by a visit to Mr. Cockburn, the gardener at Kenwood. One grand cause of the beauty of Kenwood, though it is one that scarcely admits of imitation, consists in the prevalence in it of natural oak woods, and the manner in which they are displayed by the hilly and undulating surface of the ground. The same extent of wood on a flat surface could never have presented more than a side view to the eye of a spectator walking through the grounds; and the beauty of the individual trees in the interior of the wood must, consequently, have been entirely lost. Whether a wood on a flat surface were a mere strip, or a mile in depth, the effect to a stranger would be the same; but in the amphitheatre at Kenwood, the trees are raised one above another, they are in no part crowded together, and not only display great extent of wood as a whole, but a degree of grandeur and beauty in the individual trees, which they could not exhibit on any other character of surface. Hence the impossibility of conveying an equal expression of naturalness and sylvan grandeur in any place of smaller extent, or in any place (whether large or small) having a flat surface. Another feature of great interest connected with the woods of Kenwood is, that they form part of the natural forest, which in by-gone ages surrounded London, and which the progress of civilization has gradually cleared away; many of the trees are of the British Chestnut Oak (*Quércus sessiliflòra*), which is now seldom found growing in a wild state in Great Britain, the common British oak having nearly superseded it.

BOOK III.

PLANT-HOUSES.

506. *Houses for the protection of plants* are of various kinds; some merely useful, and others useful and ornamental; some for plants from climates only a little warmer than our own, and which, consequently, require no means of heating, as they are only necessary to protect the plants they contain from severe frosts, and from the excessive damps of our climate; others, which require to give a little warmth, as well as shelter, to the plants placed in them; and others, which are intended for the plants of tropical climates, which must be provided with the means of equalling the heat and moisture of climates of that kind. In the present work, attention will be principally paid to those houses which are intended for ornamental plants, as the houses for growing and forcing fruits have been already amply described in the twin work called *The Horticulturist.*

SECTION I.

USEFUL PLANT-HOUSES.

507. *The merely useful plant-houses* described and treated of in the present work, will be only those which are required for propagating greenhouse plants, and keeping them through the winter; those used for the plants of very hot climates being considered partly useful and partly ornamental. The plant-houses used in floriculture, which are merely for use, not ornament, are principally pits, or low greenhouses; but this division also includes rough frames for protecting walls and trellises in severe weather, which are removed in summer.

508. *Protected trellises* are chiefly used for growing peaches and nectarines, but they may be applied to ornamental plants, or a conservative wall. The plants are "planted in a slanting position, and trained to a trellis 12 ft. wide, about 2 ft. 6 in. from the ground at the back, and 1 ft. in front;" strong posts are inserted in the ground, one beyond the trellis, both in front and behind, and on these posts is nailed a frame to receive the lights; the posts and the frame being of rough wood, sawn at the Brentford Saw-mills. The details are given at length in the Appendix to Rivers's *Miniature Fruit Garden*, but the plan is not new having been practised many years ago at Hylands, Strathfieldsaye, and many other places; the only new features in Mr. Rivers's plan being the employment of rough wood, and rough plate glass, in panes 2 ft. long, and 1 ft. wide; whereas, at Hylands and Strathfieldsaye, the frames and trellis were not at all unsightly, and the glass the same as that in ordinary

use in hot-houses, when we saw them in 1831, when the frames in question were in full employment at both places.

509. *Protected walls* are of various kinds, some being protected by canvas curtains, and some by moveable glass frames.

510. *Conservative wall protected by curtains.* *Fig.* 329. shows part of a wall of this kind at Chatsworth, which has been found to answer extremely well.

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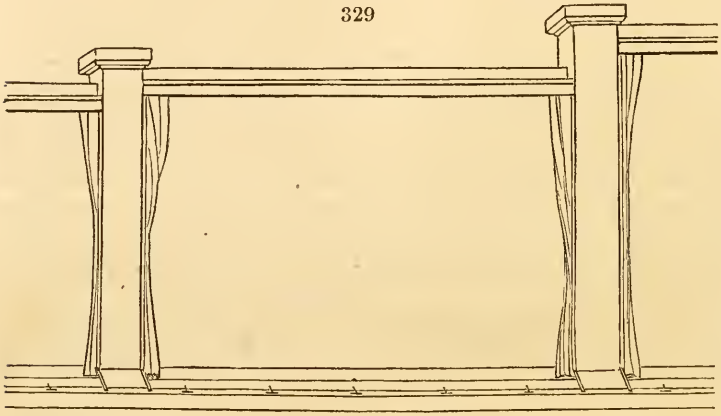

It is divided into panels, about 27 ft. in length, and 18 ft. in height, rising one above another, and divided by stone piers. The wall is flued, and covered with a wooden trellis. It has a coping, which projects about 1 ft. in front, with rods under it, on which the rings of the curtains run. Each panel has a separate rod with two curtains, which open in the middle, and draw back like window-curtains in the day, but are closed at night. The curtains are of stout hempen cloth; and in order to provide for the contraction and expansion in wet and dry weather, and also to keep the curtains close together, the lower edge of the curtain is furnished with rings, which are put over hooks fixed on the edge of a board, which lies flat on the border, at the distance of 13½ in. from the wall. The outer edge of this board, which is 11½ in. wide, is hinged to a rail 4½ in. broad, which is made fast to stakes driven into the ground, and sawn off level with the surface. In consequence of this arrangement, when the wet weather contracts the curtains, instead of shrinking up, and exposing a part of the wall to the weather, it merely lifts up the inner edge of the board, which sinks down to its place again with the return of dry weather. The edges of the curtain, next the piers, are made fast to slips of wood fixed to the wall, and the edges where the curtains join in the middle, overlap each other, and are tied or buttoned together, if the weather is severe. *Fig.* 329. is an elevation of part of the wall, showing the piers (the one rising higher than the other, as the wall ascends a sloping surface), and the curtains drawn aside.

Fig. 330. is a ground plan of the same portion of the wall; in which *a* is the dug border; *b*, the rising and falling board; *c*, fixed boards opposite

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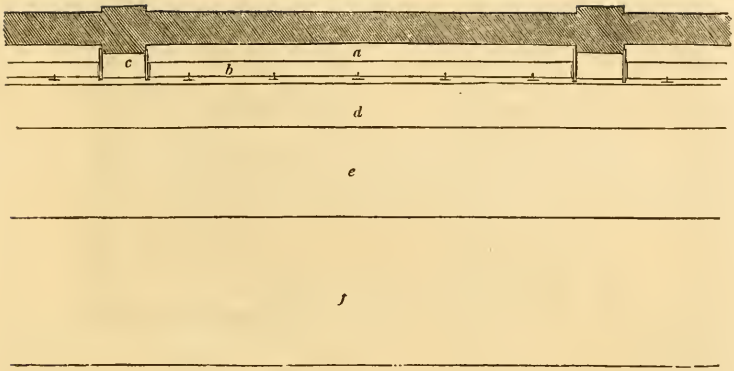

the piers; *d*, a border of turf; *e*, a gravel walk, 6 ft. wide; and *f*, the lawn.

Fig. 331. is a section of the wall, the wooden coping, the curtain, and the rising and falling board.

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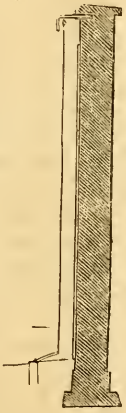

Fig. 332. is a section of the lower part of the wall, the rising and falling board, and the ground-rail to which it is hinged, on a larger scale. A list of plants for a wall of this description, will be given in the after part of this work.

511. *Conservative wall, protected by glass.*—A specimen of a wall of this kind is shown in *figs.* 65. and 66., in p. 138. and p. 140, which existed, and was found to answer perfectly for upwards of fifteen years, in the garden of Mr. Loudon's house, Porchester-terrace, Bayswater. The appearance of this glass-case is shown in the section, *fig.* 65 at *a*. The wall was flued, and the glass sashes were fixed in a wooden frame at an angle of about 45°. The wooden frame, resting its upper part against the flued wall, and its lower part being supported by another brick wall, about 18 in. high, about 3 ft. from the main wall. The frame was divided into compartments, and the glass sashes pushed along a groove in the lower part of the frame, when it was wished to open them. The sashes were removed altogether in summer.

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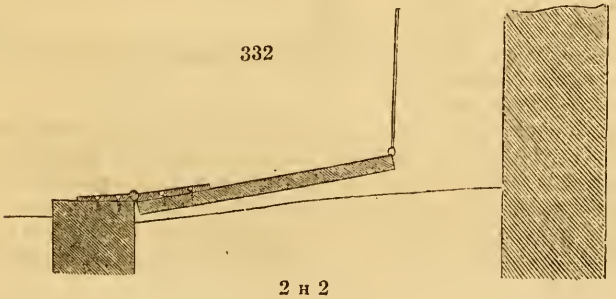

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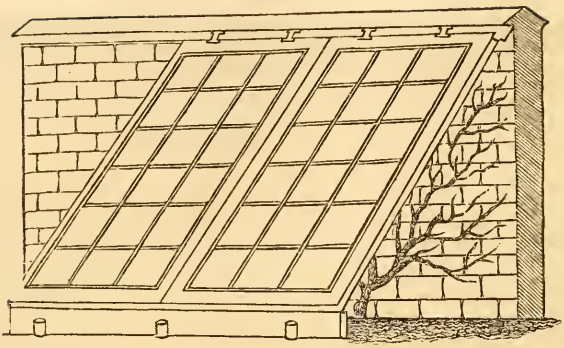

Fig. 333. shows a moveable glass-case, applied to only part of a wall to protect some particular plants.

512. *In all country villas and mansions* it is necessary to raise a great many young plants of pelangoniums, calceolarias, verbenas, &c., every year, to supply the place of those which are bedded out, and left in the open ground till they are killed by the frost. The most common mode of raising these plants, is to make an immense number of cuttings in the latter end of August, and the beginning of September, and to plant them in what are called store-pots, or pans, sometimes as many as fifty or sixty in a pot. These pots are then placed in what are called cold pits, because no heating apparatus is required for them, where they are kept till spring. It is, therefore, evident that these cold pits are the most useful of all structures to the flower-gardener; particularly as the same wooden frames and glasses which have served for the cold pits during winter may, if not fixed with mortar on the walls of the pit, serve, after the store-pots are taken out of them in spring, as frames for hotbeds.

513. *A cold pit* is formed of brickwork, about 3ft. high behind, and 2 ft. in front. The foundation walls are 9 in. thick, and those above ground 4 in. thick. The section of a pit of these dimensions, is shown in *fig.* 334. On the brickwork rests a frame of wood, divided into compartments, so as to hold one sash or light in each, and grooved so as to allow the sashes to slide up and down. The pit may have any number of lights required, but the usual number is four, as shown in *fig.* 335. One of the lights is shown in *fig.* 336., which is glazed with panes of glass 2 ft. 6 in. long, by 9 in. wide. Each light has a handle at the upper end, to open or shut it when required. Sometimes the walls of the pit are made hollow; as it is found that the stratum of air enclosed between the two walls, is more effica-

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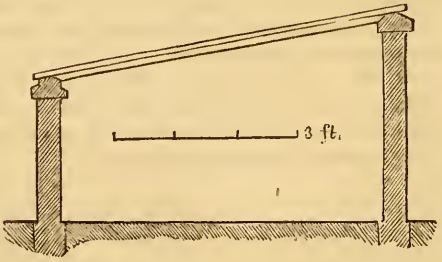

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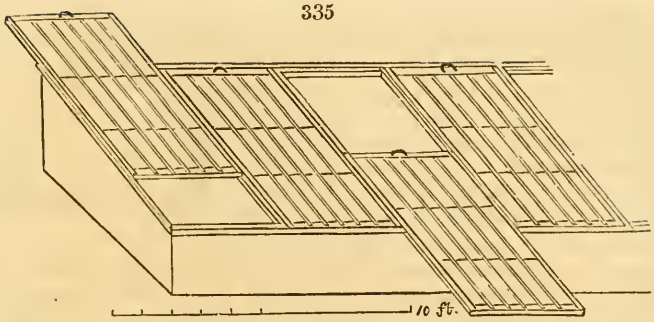

cious to keep out the cold than any mats. Sometimes merely a bottomless box of wood is used, like the wooden frame of the cold pits already described, but only for one or two lights. This box is set on the ground, and the frost is prevented from penetrating through the woodwork, by surrounding it with dead leaves, straw, litter, or even earth. *Figs.* 337. and 338. show a cold pit of somewhat larger dimensions, made with a span roof in order to give room for camellias, and other

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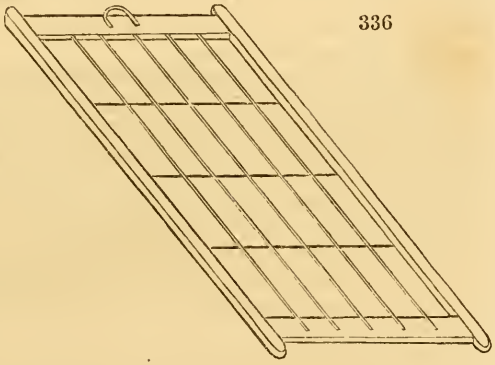

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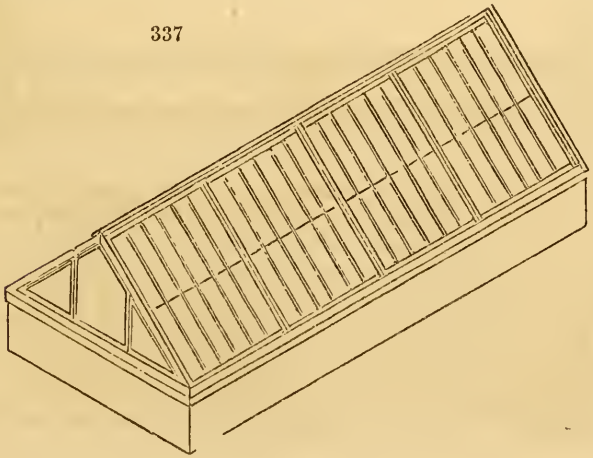

similar shrubs to be kept in the centre. For this pit, it may be as well to use Hartley's patent rough glass, which is generally thought best in panes 18 in. long, and 9 in. broad, as it does not require shading; and the camellias and other similar plants are apt to have their leaves scorched if exposed to a very strong light. No means of heating these pits is shown, as, indeed, none is required; for when the pit is filled with the store pots the glass at the top is covered with mats, during severe weather, and the frost is effectually kept out.

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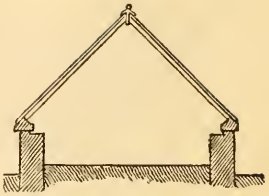

514. *Hot-beds* for raising seeds, and striking some kinds of cuttings, are generally found in bottomless wooden frames, with one or two lights. As however fresh manure would be too strong for raising most ornamental flowering plants, beds that have been used for cucumbers or melons are generally chosen, after the fruit has been gathered, and the plants have been taken up and thrown away. The bed is then stirred up, and perhaps a layer of fresh soil, about 6 in. thick, is laid over the surface. In this the seeds may be sown, or the cuttings planted; or the seeds or cuttings may be put in pots, and these pots may be plunged in the bed.

515. *A greenhouse or pit*, which will serve as a geranium-house, or heath-house for holding the pots into which the young plants raised from cuttings of geraniums, &c., have been put in spring, may be formed as shown in *figs.* 339. and 340. *Fig.* 339. shows the elevation of a small span-roofed green-

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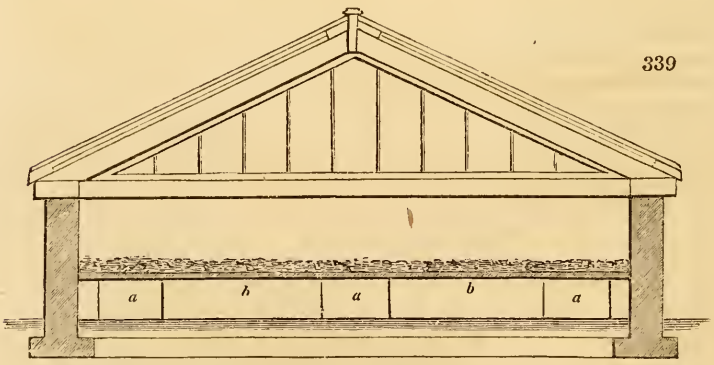

house or pit, in which *a a* are air-flues, covered with plain tiles, and *b*, tiles covered with sand, to receive the plants. *Fig.* 340. shows the plan of the same pit, in wich *c c* are small gratings to admit the air, and yet exclude the vermin; and *d d* are brick pillars to receive the tiles. This pit is admirably calculated for keeping the hardier species of greenhouse plants which are intended for bedding out, from the method of admitting air at the bottom, by which they are gradually hardened, and the ease with which the lights are taken off when more air is required, they being only hung on with hooks-and-eyes. There is also an ingenious way of covering the lights with mats, in severe weather. The mats are fastened at one end to the ridge of the roof,

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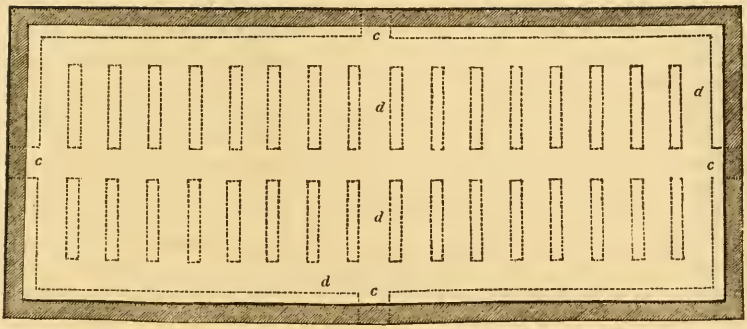

and at the other to a roller, the whole length of the pit; by which the mats are readily run down over the lights, and kept down without any fastening by

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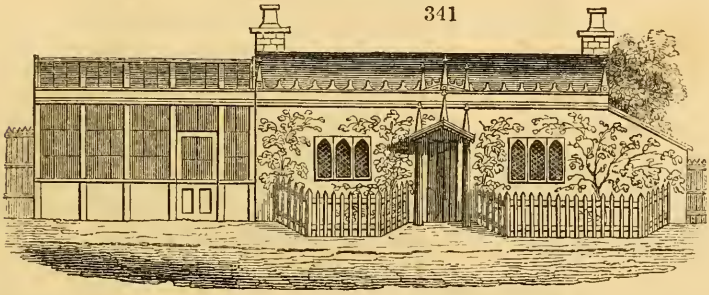

the weight of the rollers. They are also useful for shading, unless the rough glass is used in glazing, in which case no shading is required. This house is very suitable for heaths.

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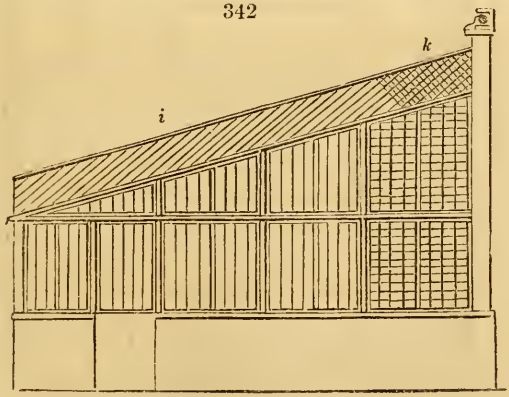

516. *A small greenhouse*, for young plants which are to be bedded out, may be attached to a gardener's cottage,—as was the case at Mrs. Lawrence's villa at Drayton Green, and, as is shown in *fig.* 341., for the convenience of the gardener attending to the plants at his leisure hours; the house shown is of the simplest description, and it is warmed by the fireplace of the living-room of the cottage. In this house there may be troughs filled with sand, and heated by hot water pipes, or smoke flues passing under them, which will serve instead of hot beds for striking cuttings; the pots containing the cuttings being plunged into the heated sand.

517. *A greenhouse, with a stove attached*, is shown in *figs.* 342, and 343. The house has a ridge and furrow roof, and *fig.* 342. is a cross section through the middle of one of the ridges of the roof, in which are shown at *i* the oblique direction of the sash bars between the ridge and the furrow, and the

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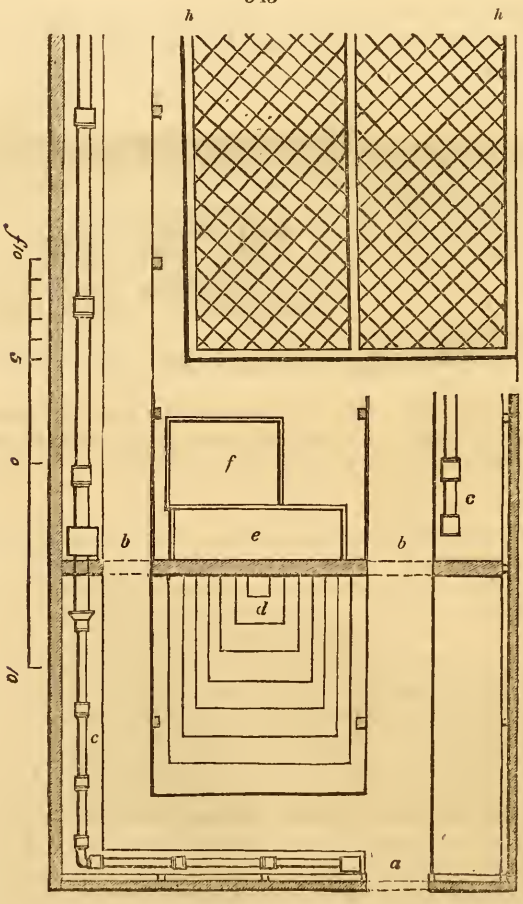

panes of glass put in at right angles to the bars at *k*. There are openings under each ridge, in the back wall, and also in front, for ventilation.

Fig. 343. is a ground plan of a portion of this house, showing the entrance at *a*; a partition, by which a part of the house may be treated as a stove, *b b*; the hot water pipes, *c c*; the stage for greenhouse plants, *d*; cistern for water in the stove division, *e*; and box for Mùsa Cavendíshii, *f*. The cistern and the box are formed of slabs of slate, held together by iron bolts, which pass through the two opposite plates, and are made fast with screws and nuts: *h*, *g*, *h*, show a vertical profile of part of a ridge on a large scale, in which *g* is the ridge piece, or crown of the ridge; and *h h* the gutters or furrows. The width of these ridges, from furrow to furrow, is about 6 ft.; and the height, from the level of the furrow to the crown of the ridge, is about 3 ft.

SECTION II.

ORNAMENTAL PLANT-HOUSES.

518. *Ornamental structures* for containing plants are of various kinds, and of every size, from the little plant cabinet to the large conservatory or winter garden. Some of these plant-houses are not provided with any means of heating; others may easily be warmed moderately; and others are regular hothouses or stoves, supplied with abundance of artificial heat, so as to imitate the hottest climate of the tropics. In the present work the designs given will be chiefly of rather small houses, which can be erected and kept up at a moderate expense; and only one or two of a costly description will be admitted.

Subsect. I.—*Plant Cabinets.*

519. *Plant cabinets* are the most common of all the kinds of greenhouse; and they are generally considered more as ornamental appendages to houses, than as places for rearing or keeping plants. In fact, the plants they contain are generally grown and kept in some other place till they are ready to flower. A plant cabinet may be described as a small chamber, built on the outside of a town house or suburban villa, and constructed principally of iron, brick, or wood, but having a glazed roof, and frequently glazed sides. It is generally entered by a glazed door or window from the staircase or landing. As it is chiefly intended for preserving plants which have been brought forward elsewhere, it is of no great consequence whether it is placed against the north, west, or east side of a house; though the south and south-east sides are doubtless the most favourable, and the north-east the least so. In street houses, it is often very conveniently projected from a staircase window, either on the drawing-room floor, or the floor above. In other cases, it is sometimes joined to the back parlour, which is made to open into it; or it is placed over the entrance porch; and, occasionally, it forms a projection, supported on pillars, from the back drawing-room. *Fig.* 344. shows the elevation; *fig.* 345. the section; and *fig.* 346, the ground plan of a plant cabinet of the simplest kind, attached to one of the houses in the Palace Gardens, Kensington. In *fig.* 346. *a* shows the entrance from the drawing-room, and *b* a flight of steps

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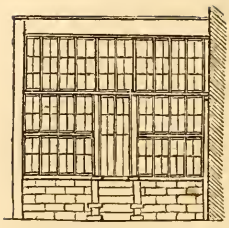

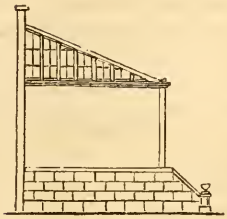

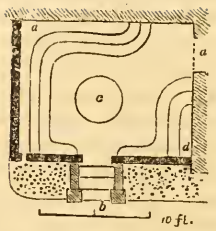

leading to the garden; *c* is a large camellia in the centre; and *d d* are shelves for pots. Very commonly a plant cabinet is formed on the flat roofs of some attached out-buildings, such as a back kitchen, washhouse, or rubbish place. In short, there is no situation where there is a door or a window in the house, and where perpendicular light is obtainable outside, in which a plant cabinet may not be formed. However irregular the plan may be in point of outline, and however uneven the roof or roofs which are to form the floor, the situation is still eligible for a plant cabinet, or a small greenhouse; on the same principle as an irregular piece of ground is for laying out a flower-garden in the picturesque manner. In the plant cabinet, as in the flower-garden, the whole depends on the contrivances for displaying the flowers. The great art in arranging an irregular plant cabinet consists in the disposition of wires and rods, in the form of trelliswork, arches, and arcades, for climbers; and of imitations of rockwork, banks, or benches of stones, for receiving bushy or creeping plants in pots, such as pelargoniums, mesembryanthemums, &c. The rockwork, banks, benches, &c., may be made of bricks and cement, stained or dashed with paint in such a manner as to represent different kinds of stone or spars; or natural crystallisations of different kinds may be procured. The smallest, the most irregular, and apparently the most unfitting situation for a plant cabinet may be rendered interesting by means of climbers on perpendicular props, no matter how irregularly placed, plants rising from groups of rockwork on the floor, and trailing plants suspended in pots or baskets from the ceiling. In some cases, the effect of a picturesque grove of climbers of this kind may be heightened by the introduction of a little stained glass in the roof; but this ought to be used most sparingly, and not in a larger portion in one place than a star a couple of inches in diameter, half a dozen of which will suffice for the roof of a plant cabinet containing upwards of 100 square feet of glass. In the evenings, on particular occasions, two or three coloured lamps may be introduced; but these, also, should be used very sparingly. Whatever attracts more attention than the plants should be avoided, as interfering with the main object of the structure.

520. *Wherever the plant cabinet is placed,* and in whatever manner it may communicate with the house, one point only in its construction is absolute; which is, that it should be at least as lofty, from the floor to the glass of the roof, as the living-rooms of the house. When this is not the case, it has an appearance of meanness, which, instead of an elegant ornament, renders it rather a disagreeable excrescence. The form of the ground plan must, of course, be in a great measure determined by the situation; but, in general, a parallelogram, placed with its narrow end to the house, will have the best

effect. One side and the roof should, at all events, be glazed; but, if both sides be glazed, the effect is much better than if one is opaque; provided, however, that the roof is glazed, and the width of the house is as great as its height, or nearly so. *Fig.* 347. shows the ground plan, and *fig.* 348. the side elevation of a plant cabinet of this description; and *fig.* 349. shows the elevation of the end, with steps leading down to the garden. In *fig.* 347. there is a bed in the centre for planting camellias, and there are holes left in the wall at *a* for the admission of vines or other climbing plants, the roots of which are to be in a bed outside the house. Plants will thrive in a house with all its sides opaque; it being understood that the house is as wide as the side walls are high, and that the plants are placed on

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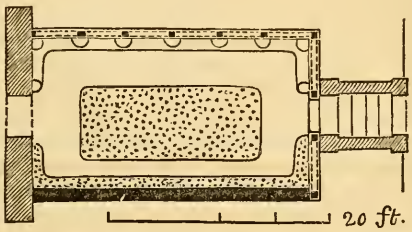

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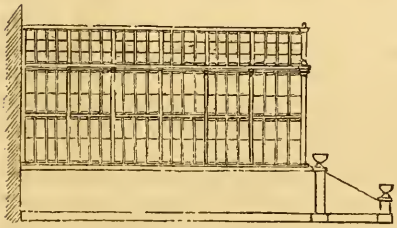

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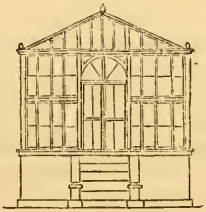

a stage, or on the floor, so that the light may fall in direct lines on the upper surface of their leaves. The sides, when of glass, may be framed and glazed in any mode considered as in character with the windows of the house; and the roof may be glazed like a common span-roofed hothouse: but, if the panes of glass are above 8 in. wide, they ought to be of extra-thick crown glass, or of the thick rough glass, such as is now sold in London for conservatories; or of plate glass. One or more sashes in the side or sides, or one sash in the farther end, ought to be made to open at top and bottom, for the sake of ventilation; but this may be accomplished without having the sashes hung with cords and pulleys, by having two narrow sashes made to slide past each other, or even by having a pane in the upper and lower part of each window to open. In general, all hinged sashes or panes should open outwards; because then they are not in the way of the plants within.

521. *Where a plant cabinet faces the north*, and the situation is much exposed to north winds, it would be very desirable if the glazed sides and roof were made double. This construction would retain the heat much better in the winter time; and during summer the inner sashes might be taken away altogether, and used for growing cucumbers or melons in the garden or yard behind the house, or, if there were no room there, on the roof, if that were

suitable. In the case of plant cabinets facing the north, where the expense of the double-glazed roof and sides is considered too great, arrangements should be made for forming a temporary inner roof of matting or canvass, for the purpose of retaining the heat during the night, and even sometimes during the day in severe weather. An inner covering of matting or canvass, at 6 or 8 inches distance from the glass, is always much more powerful in retaining heat, than if the same covering had been placed outside the glass; because in the inside it is kept dry, whereas on the outside it will be liable to become saturated with wet; and in that state it would carry off much more heat by evaporation, than can possibly take place from water running down the smooth surface of the glass. There is another reason against all outside coverings except those of boards, which is, that they are apt to be deranged, and to break the glass during high winds. The inside covering may be made to roll up like a window-blind, and it may rest on iron rods, placed parallel to the roof and to the sides, and about 8 in. distant from them. In many cases, shutters may be contrived for the roof, and put on from an upper window; and this covering, when the weather is extremely severe, may be left on for two or three days at a time; it being understood that light is freely admitted from the sides. Provided that the roof of a greenhouse is securely protected from perpendicular cold, as it is called, a covering for the sides is comparatively of little importance. We may add that, among nurserymen and commercial gardeners, a substitute for these different coverings is found in tying or nailing bast mats to the trellis or rafters of the roof and sides, inside the house; and, as such coverings are seldom wanted above a month or two in the year, during the depth of winter, it is hardly worth while going to the expense of having them made of canvass for the inside, or of boards for the outside.

522. *The placing of the plants in the interior of a plant cabinet* should vary according to the size of the cabinet and its situation. Where the cabinet is 10 ft. or 12 ft. wide, and of an equal or greater length, a narrow stage in the middle, with a shelf a foot broad round the sides, will display the plants to the greatest advantage; but this supposes that there is nothing disagreeable in the exterior scenery, which will be seen through the side windows. Where it is not desirable that the external objects should be seen, the stage, instead of being in the middle, should be ranged along the sides and the farther end, and in that case no more of the sides require to be glazed than what is above the highest shelf of the stage. As the main object is to display the plants to the spectator within, and as, when placed in close ranks on a stage, such plants can only be seen on one side, the admission of light to their other side, as it would chiefly strike the under sides of the leaves, is comparatively of little use; and hence, that portion of the side and end walls which is under the level of the top shelf of the side and end stages may always be constructed of opaque materials, such as brick, lath and plaster, &c., which will be a considerable saving in first cost. In general, wherever there are objects exterior to the plant cabinet which it is not desirable to see, the stage should be placed against the side walls and the further end; but, where there is abundance of light on every side, and nothing without to conceal, the best effect to the eye will be produced by bringing the glass down to the ground on every side and the farther end, and by having the stage in the centre.

523. *The mode of heating a plant cabinet* is sometimes a matter of difficulty,

on account of the small space to be heated, and the large surface exposed to the external air. We have already mentioned the practicability of heating such places from the kitchen fire, or from a fire or boiler placed in another story; and suggested, at the same time, that the necessary pressure on the boilers, or the tubes, rendered this mode of heating by no means advisable. It is also a fact, that in some places sufficient warmth may be given to the plant cabinet by opening the door of the sitting-room communicating with it the last thing before the family retire to bed, and leaving it open all night. On the whole, we are of opinion that the best mode of heating plant cabinets, or small green-houses attached to dwellings, is by some source of heat on their own level; and not from any source either above or below. If no flue has been built in the wall of the house suitable for carrying off the smoke from any stove or fireplace made in the plant cabinet, a tube of cast or sheet iron, or of earthenware, may be partially sunk into the outer face of the wall of the house; and disguised by a projection so designed as to be consistent with the architectural character and effect of the elevation. In some places, tubing of this sort may be placed against the wall, and covered with an architectural case of boards, metal, or slates, painted in imitation of stone; and sometimes these projections admit of being disguised by common ivy, or the Virginian creeper. At all events, no architect of the slightest degree of ingenuity will be at a loss to discover the proper situation for a circular flue of 3 in. in diameter; and no builder who has any regard either for appearances, or the free ascent of the smoke, in such a flue, will ever put it up without a casing to give it architectural effect, and to serve as a nonconductor, and thus to preserve what may be called a lining of heat round it, to favour the ascent of the smoke. The situation for the flue having been fixed on, the next thing is to determine the mode of heating; and this, we are of opinion, ought, in most cases of small plant cabinets, to be by a hot-water stove placed within the cabinet, and heated by a register fire-pot within, like that of Dr. Arnott. The fuel used may be coke on ordinary occasions; anthracite when a greater heat was wanted; and, perhaps, charcoal in the most severe winter nights, when the heat required was very considerable. A stove of this kind, properly constructed, may be kept burning night and day, regulating the admission of air to the fire according to the heat required. For this purpose, the stove may either have a hand regulator, as in the imitations of Dr. Arnott's stoves, a thermometer one being unnecessary; or, in order to insure a draught, the air may be brought to the stove by a leaden pipe of 1 in. in diameter within, from a lower level, either immediately under the house, or from the open air; or from any place from which it is desirable to extract the air for the purpose of ventilation. In all these cases, the air admitted to the fire may be regulated by a common stopcock, like that in use for common water-pipes. We think it not unlikely that the smoke, or products of combustion, where the kind of fuel we have recommended is used, might be conveyed away in a horizontal direction, or perhaps even downwards to a drain, in a tube of not more than double the diameter of that used for supplying air to the fire; but, never having seen this mode put in practice, we cannot venture to recommend it. We have seen the common smoke-flues of hothouses discharge their smoke horizontally, but it is always attended with a waste of heat.

524. *Heating with hot-water.*—The mode in which water is heated by a

small stove is now so well known to ironmongers, that it seems scarcely necessary to describe it. Supposing the fire-pot, or fireplace, surrounded by firebrick, to occupy a cubic foot in the centre; then enclose this on three sides and over the top with a square or circular double cylinder, water-tight. The side not cased with water must contain the furnace door for supplying fuel, the ash-pit door for withdrawing the ashes, and an opening immediately under the top, or cover, for the insertion of the tube to convey away the smoke. On any of the three sides cased with water two tubes must be joined, one at the bottom, and the other at the top; and these may be conducted on a level to any distance from the stove that may be desirable, being joined at the farther extremity, either by a vertical tube, or by the ends of the horizontal tubes being inserted into an open cistern. This being done, and the fire lighted, the circulation will go on in consequence of the difference in specific gravity between cold water and hot water.

525. *A very simple apparatus* of this kind is shown in the section, *fig.* 350.: *a* is the fire-pot; *b* is the furnace door; *c*, the ash-pit door; *d*, the situation

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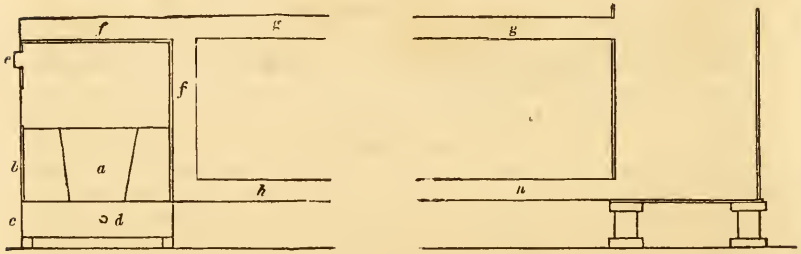

of the pipe which supplies air; *e*, the nozzle to which the smoke-pipe is attached, and which may be turned in any direction, except downwards, that may be suitable to the situation; *f f*, the casing of water which surrounds the boiler; *g*, the upper pipe; *h*, the under pipe; and *i*, the cistern which forms the junction between both pipes at the farther extremity. Stoves and pipes of this description may be placed under the stage of plants, so as to be completely concealed from the eye; a portion of the stage being made to separate from the rest, and to draw out, so as to admit the attendant to supply fuel, &c. In order to save time, and to look well by never requiring the plants to be taken off the shelves, the moveable portion of the stage may be on casters and small wheels, the latter running in grooves as far as the area of the stage extends, and the casters serving to make it run easily on the paths where the grooves would be unsightly. In plant cabinets where there is no stage the pipes may be concealed by rockwork, or by some other suitable contrivance; or the casing of water may be enlarged, so as to form a reservoir of heat sufficient for the demands of the house, without any pipes. In some cases, the stove and reservoir of water might be covered with a small stage of plants, with rockwork, with sculpture, or with statuary; or the stove might be rendered ornamental in its form, so as to be regarded as a handsome piece of furniture: but this last plan would, we think, render the plant cabinet too much like a living-room.

526. *A portable hot-water apparatus* for plant cabinets is shown in *fig.* 351., which was invented by Mr. Joshua Major of Knowstrop, near Leeds.

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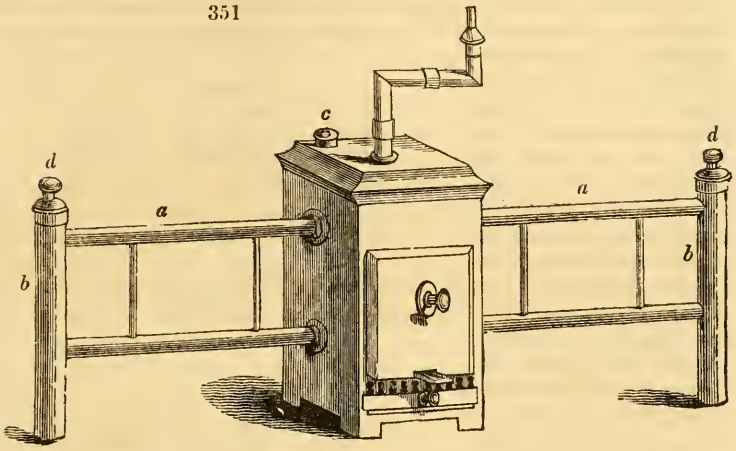

This apparatus may be made of tin or copper; the latter, though more expensive at first, being from its durability much the cheaper in the end. Charcoal is employed as fuel for this apparatus: oil lamps and gas have been tried instead of charcoal, but with not nearly so powerful an effect. When charcoal is used, it is necessary to employ pipes to conduct the effluvium arising from it out of the place to be warmed; and it will be advisable, in order to abstract all the heat possible from this smoke-pipe before it reaches the outside of the house, to have it of a considerable length. In order to render the smoke-tubes suitable for any situation, it is necessary to have elbow pipes, like those used for turning corners, and several lengths of straight pipes, by means of which the piping may be lengthened, and turned in any direction that may be required. The largest-sized apparatus should not be more than 8 ft. long; as, if longer, it would be inconvenient to move about. The size of the one which Mr. Major found the most useful is as follows:—The whole height of the centre portion of the apparatus, comprising the boiler, &c., is 15 in., and the width $5\frac{1}{4}$ in. by $7\frac{1}{2}$ in.; the fire-pan is $5\frac{3}{4}$ in. by $4\frac{1}{2}$ in., and $3\frac{1}{2}$ in. deep; surrounded on three sides by a boiler, in the form of a casing, half an inch in diameter, which becomes more spacious upwards, as the fireplace diminishes. The opening necessary for the reception of the fire-pan, and for supplying it with fuel, is 6 in. wide by $5\frac{1}{2}$ in. deep. At the top of this opening the fireplace begins to taper, and, consequently, the water in the boiler expands more immediately over the fire; the smoke-pipe takes its regular width ($1\frac{1}{2}$ in.) in the boiler, about an inch below where the lid unites; the horizontal water pipes (*fig.* 325. *a*) are each 28 in. long, by 2 in. in diameter; the end pipes (*b*) are $14\frac{1}{4}$ in. high, by 3 in. in diameter; a feeder (*c*) is added, in case it should be thought better to have the lid fixed tight on the boiler. In order to promote the circulation of the water, small holes are to be perforated in the top of the lids (*d d*), which are also intended to be fixed tight. The

apparatus may either be placed on the floor of the house to be warmed, or raised by bearers, or suspended by wire or cord; the two latter methods making the fire to burn more freely.

527. *A mode of heating employed at Strathfieldsaye*, is shown in *fig.* 352. The apparatus consists of a stove (originally Dr. Arnott's) and two copper cylinders. The stove contains two copper boilers 1 ft. deep, and 3 in. wide, which form the fire-box of the stove, out of which the boiling-water flows by the top pipe into the cylinder, and returns by the lower pipe into the bottom of the boiler. The cylinders have each thirty tubes, one inch in diameter, extending through their whole length, and among which the water flows; so that the stove and the two cylinders all radiate heat equal to their surfaces, and warm the air that passes between them. The stove is 18 in. square, and 3 ft. 9 in. high, including the ornamental cap at the top, which is four inches deep. The cylinders are 18 in. in diameter, and the same height as the stove. The apparatus consumes a bushel of coke every day, half being given in the morning, and half at night. The water is given through a covered valve near the top of each cylinder, as shown in the figure. There is a small pipe for evaporation at the back of each cylinder. The ornamental caps are moveable, and conceal the tubes of the cylinder, and the feed-hole of the stove. The smoke escapes by a tube at the back of the stove, communicating with a flue built in the wall. The apparatus has a very neat appearance, and two of them are found sufficient to heat a conservatory 67 ft. long, 27 ft. wide, and 21 ft. high, so as to preserve the plants from injury by cold or damp. For other modes of heating, see *Loudon's Horticulturist*, p. 194 to p. 218, where the subject will be found fully discussed.

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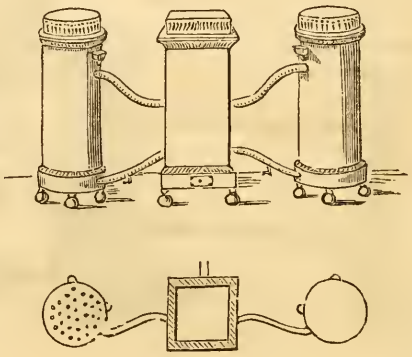

528. *Plant cabinet heated by hot water.—Fig.* 353. is a plan, and *fig.* 354. a cross section, of a plant cabinet, in which the stage is placed along the sides and against one end. The stove for heating it is placed at *a*, from which hot water pipes proceed to the right and left under the side stages; the two shelves, *b b* and *c c* being for the purpose of concealing these pipes. The stove is concealed by the portion of the stage *d*, which is on casters, and draws out with the pots on it, to admit the operator to the stove. The hot-water pipes are seen in the section (*fig.* 354.) at *e e*. The smoke from the stove may be conducted away in a tube under one of the stages, and carried up the side of the house, as indicated at *f*. The water of the roof may be collected and conducted to a cistern under the stage by the pipe *g*, placed in the opposite angle to the smoke tube. Props for climbers may be placed as

indicated at *h h*, &c.; and, during the severest weather in winter, matting may be made fast to the iron tie-rods (*i i* in *fig.* 354.) of the span roof. The exterior guttering is shown at *k*. It will be observed that artificial heat is by no means essential to a plant cabinet, and that in fact the examples which have been previously given are all intended to do without it. Camellias and vines do not require artificial heat, unless it is intended to force the one into flower, and the other into bearing earlier than their natural time; and indeed, most of the half-hardy shrubs grown in conservatories and planted in the ground, only require protection from frost, and are better without fire-heat. The plants in pots, it is true, generally require artificial heat, but they can rarely be kept alive through the winter in a plant cabinet without more labour and expense than new ones can be bought for in spring; and the house-kept plants generally have a shabby etiolated appearance. Indeed, even nursery-men very rarely attempt to keep their old plants through the winter, and they preserve their stock by cuttings; which they keep in cold pits, as before described. For the benefit, however, of those who may wish to try to keep their plants through the winter, we will give a few details on the usual modes by which plant cabinets may be heated.

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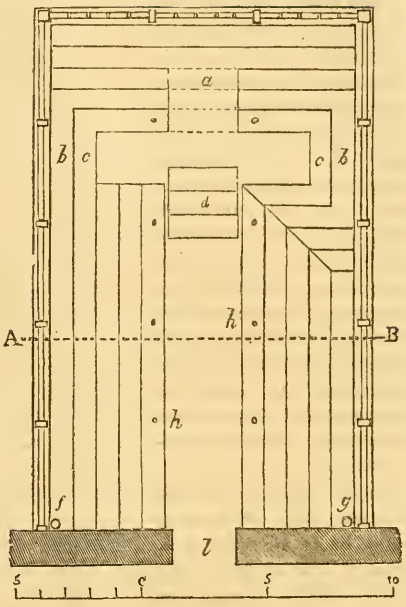

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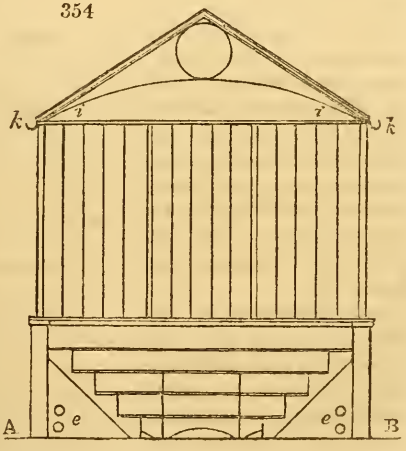

529. *A plant cabinet, arranged so as to conceal the mode of heating it.*—*Fig.* 355. is the plan, and *fig.* 356. a cross section of a span-roofed plant cabinet, with the plant stage in the middle. The stage may either be finished at the end next the entrance with right angles, as at *a*, or rounded off, as at *b*; and the further ex-

tremity both of the sides of the house, and the end of the stage, may either be semicircular or square, at pleasure. If it were square, a portion of the stage might be made to draw out right and left, to admit the attendant to the fireplace; and if semicircular, as in the plan, the semicircle might be formed into two quadrants, each turning on a pivot at the angle, and opening outwards to a sufficient extent to admit the operator to the stove, as shown in *fig.* 355. at *c*. One advantage of this arrangement is, that the stove can never be seen by a visiter; because the attendant, when he is at work at *c*, cannot escape from that place without shutting at least one of the quadrants. Another advantage is, that, while both quadrants are open to the fullest extent, as at *d d*, the pots being on the shelves, any person entering the cabinet will rather consider the appearance as the peculiar termination of the stage, than as a convenient arrangement for getting at the stove. There are props for plants at *e*. The water-pipes are shown at *f*, in *fig.* 356., and the arched rods to the props at *g*. In severe weather mats can be stretched along the whole extent of the roof, attached to these arches. The entrance from the house is at *h*, *fig.* 355.

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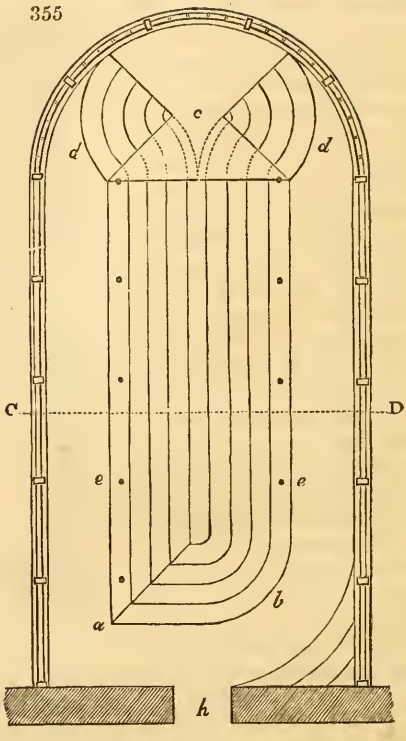

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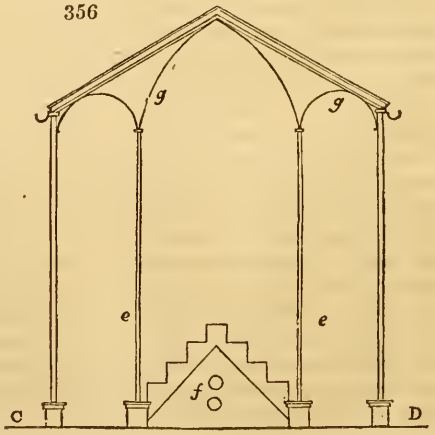
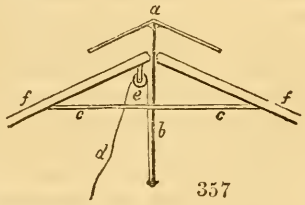


530. *Ventilation* is the only remaining point of importance, connected with plant cabinets or small green-houses, which remains to be touched on,

and this is highly essential in every situation. In houses 20 or 30 feet long, and from 10 to 15 feet broad, the sashes of the roof should be made to slide, so that the upper ones may be let down at pleasure, and the lower ones drawn up; or they may be hinged at the upper end, and made to lift up. In addition to this, the upright sashes should either be made to open outwards, by being hinged at one side (which, in general, is the best mode) or at the top; or they may slide in two grooves, so that the one can be pushed past the other. These modes are applicable to green-houses 20 or 30 feet in length; but, for those under 20 feet in length, it will generally be sufficient to have one or more small openings in the roof or sides. It must, however, never be forgotten that the atmospheric air forms an important part of the food of plants; and that unless they have a sufficient quantity, they become sickly, and will not produce either fruit or flowers. One of the simplest and most elegant modes of having an opening in the roof is by having a cap to be raised by means of a vertical rod, with a line and pulley, as shown in *fig.* 357. In this figure, which is a cross section of a span roof, *a* represents the cap; *b*, the rod by which it is raised; *c*, a cross piece of iron, in which the rod *b* works; *d*, the cord passing over the pulley *e*, for raising and lowering the rod; and *f*, the rafter (forming part of the span roof) which supports the whole. The rod and bars of the cap are generally of iron; and the panes of glass small, to lessen the risk of breakage. Sometimes the cap is balanced by a weight attached to a cord which passes over a pulley fixed on the other side of the rod opposite to *e*; and which, by counterbalancing the greater part of the weight, and leaving little more than the friction by the rod passing through the bar *c* and the rafter *f* to be overcome, renders it easy to raise a cap of the largest size, either by hand, or by a self-acting apparatus to be hereafter mentioned. Though we have shown in *fig.* 357. this cap on the ridge of a span roof, yet it may be constructed with equal ease on the upper part of the slope of any pent roof, or even in any part of that slope, by introducing on the upper side of it a cross bar, or a flashing of lead, to throw off the rain to the two sides. Air may also be admitted through the side sashes, by hinging a flap in the upper part of any of the sashes, with a lever and pulley to open it, as shown in *fig.* 358. In this figure *g* is a lever, which, when pulled by the cord *h*, raises the flap at pleasure to any point not beyond *i*. Whenever ventilators of this kind are used, they ought to be placed in the highest part of the house; because as the hottest air always ascends, it consequently collects there, and will pass off by any opening with greater rapidity than it would through an opening on a lower level, admitting a counter current of fresh air to supply its place.



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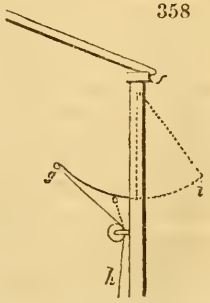

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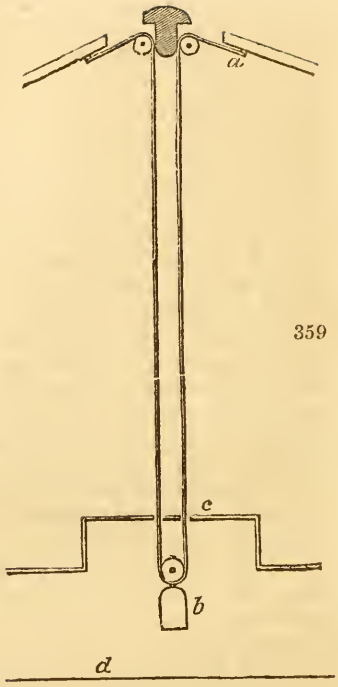
531. *When the sloping sashes of a span roof are made to slide*, the operation of opening them may be greatly facilitated by balancing them with a weight in

the manner shown in *fig.* 359. In this figure, *a* represents cords attached to two opposite sashes, and passing over pulleys fixed on the ridge-piece; after which, under the stage (*c*), they are joined together at *b*, which represents a weight attached to a pulley, and which weight is sufficiently heavy to balance the two sashes. By this arrangement, either sash or both sashes may be let down at pleasure, to any length desired. When they are drawn closely up, the weight (*b*) is within 2 in. of the floor (*d*); but, if it were necessary, an opening might be made in the floor for the descent of the weight to the extent of 2 or 3 feet. On inspecting the figure, it will appear evident that a cap, such as that described in *fig.* 357., may be balanced and raised in a similar manner, as shown in *fig.* 360., and as practised in the case of chandeliers in churches and ball-rooms. In this figure, the weight (*e*) may have a basket or saucer attached to it, so as to admit of disguising it, by surrounding it with pots of hanging plants. In this case, however, there should be heavier and lighter weights to hook on at pleasure, so that, with the addition of the pots of plants, the total weight should be no more than just sufficient to balance the cap.



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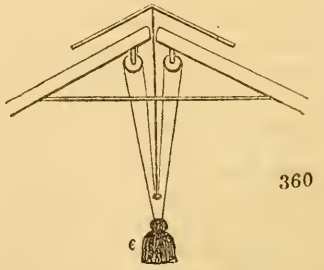
532. *Regulation of temperature.*— In the case of small green-houses, where a regular gardener is not kept, a provision for preventing the house from becoming over-heated, which will act independently of human assistance, is very desirable. There are many contrivances of this kind; some, such as Kewley's automaton gardener, calculated for regulating the temperature to the greatest nicety; and others for merely preventing great extremes of heat. The simplest and most economical mode is to have a hinged pane in the upper part of one of the upright sashes, opening inwards. To the lower part of this pane one end of a cord is attached, and the other is joined to a netting which encloses a bladder nearly filled with air, and air-tight. A string from the other end of the bladder is attached to any fixed point near at hand. The bladder should be moderately distended, by filling it with air



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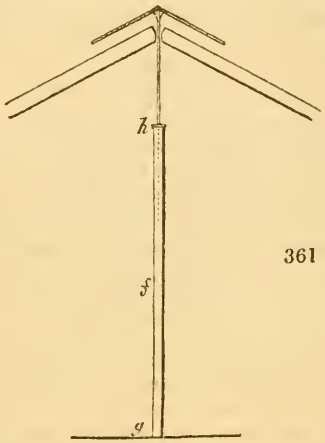
in the house, when the air of the house is at the highest temperature required; and, consequently, when any increase of temperature takes place, the air in the bladder will expand and completely distend it, so as to change its shape from that of an oval to that of a globe; shortening the long axis and lengthening the short one. The effect of shortening the long axis is to pull in the hinged pane of glass, and thus to admit the external air. This is, without doubt, a very rude mode, and will not regulate the temperature with any degree of nicety; but for ordinary purposes, and where economy is a great object, it is quite sufficient. Another mode consists in applying a hollow brass tube, of 5 or 6 feet in length, against the lower part or valve of a window that opens outwards, or against the lower end of the vertical rod of a cap which opens upwards. Thus, in *fig.* 361., if we imagine the rod *f* to be a hollow brass tube, touching the floor (*g*) at one end, and the spindle (*h*) of the ventilating cap at the other; and that, when the rod is in this state of contact with both the floor and the spindle, the house is at the maximum temperature required; it is evident that any increase of heat, by expanding, and consequently lengthening, the brass rod, would raise the ventilating cap; and the extent to which this might be done, would be greatly increased by placing the brass rod on the end of a lever. Brass rods, when required to open the sashes or ventilators of a green-house, may also be applied in a great variety of other ways, which any ingenious mechanic will readily discover. The last mode which we shall mention is one which has been adopted with success by an eminent horticulturist, John Williams, Esq., of Pitmatson. This ventilator operates by the expansion and contraction of air in an air-tight vessel, (*fig.* 362. *a*), communicating with a cylinder and piston (*b*, *c*, *d*), which, by means of a rod (*g*), operates on the



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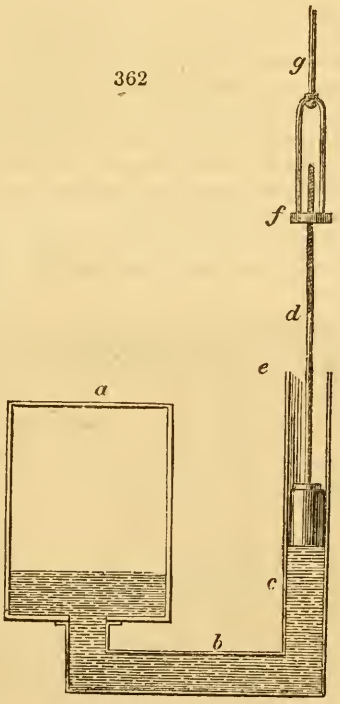

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hinged pane or sash to be opened. The use of the water or other fluid is to confine the air; and, by that means, when the air expands or contracts, it operates upon the piston. By means of an adjusting screw, the register may be made to open at any required degree of heat. The air-vessel should contain several gallons, according to the size of the valve or register to be opened. When first used, the vessel must be heated sufficiently to expand the internal air; water is then to be poured in at the top of the cylinder, so as to give the required motion to the float; and about half an inch of fine oil must be laid on the top of the water, to prevent evaporation. In a plant cabinet, such an instrument may be conveniently placed under the stage, so as to have the rod (*g*) directly under the ventilator or sash to be opened.

Subsect. II.— *Ornamental Green-houses.*

533. *A green-house* is a house with a glazed roof and sides, in which plants are kept in pots; usually on wooden stages in the centre, but sometimes on the brickwork, casing the pipes or flues; or on shelves at the back or sides of the house. The green-house differs somewhat from the plant cabinet, which is always an excrescence affixed to the house, and generally entered from the staircase or landing-place of the first floor; whereas the green-house is always built on the ground floor, and may be either attached to the house or not at pleasure. Some green-houses have no apparatus for heating; and those which have hot-water pipes, smoke flues, or any other mode of heating, have only a sufficient apparatus to keep up a moderate heat, say from 45° to 50°. When plant houses can be heated more than this, by artificial means, they are no longer called green-houses, but stoves. Green-houses, without fire heat, are generally used for camellias, the Australian acacias, some of the Australian climbers, and most of the newly-introduced Chinese plants; in fact, all that are called hardy green-house plants, and which it is only necessary to preserve from the frost. Green-houses, with fire-heat, are used for Mexican and Peruvian plants, and for those from the warm parts of Australia.

534. *A small green-house, with ornamental glass,* is shown in *figs.* 363. to 365. This house, which partakes of the nature of a plant cabinet, but is not

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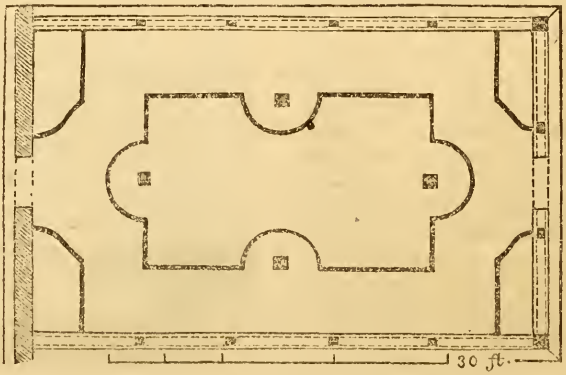

attached to the dwelling-house, is not provided with any means of heating; and it is placed so as to shut out a disagreeable view from the drawing-room windows of a town or suburban dwelling; from which windows it is easily entered across a small paved court. As the object is to prevent any external objects being seen through the glazed sides of the green-house, they are filled in with ground and coloured glass, disposed in an ornamental manner, as shown in *figs.* 364. and 365.; and the stage is also made ornamental, and is diversified with spaces for statues and vases, as indicated in the ground plan, *fig.* 363.

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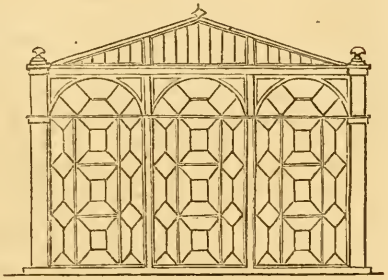

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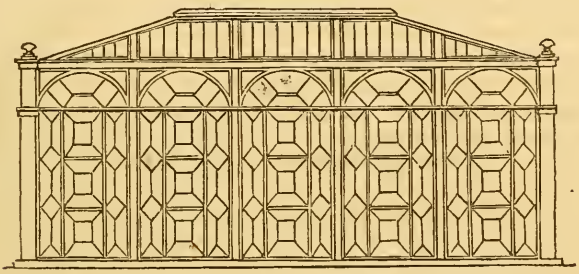

535. *A green-house, with an ornamental stage, and a trellis for climbers.* The stage is formed with angular points, so as to form a series of Vandyck, or lozenge-like projections, as shown in *fig.* 366. The principal feature in this house is the mode of arranging the stages for pots; the fanciful disposition of which has a very agreeable effect from the open space on one side, which is used as a kind of morning room by the ladies of the family, who sit there to work or read. Ornamental climbing plants are trained up the pillars, and along a light trellis in the roof, so as to afford an agreeable shade in the open space; while the angular shape of the stages, and the manner in which they are placed so as to intersect each other, allows ample space for walking between them. In the alcove, at one end of the house are placed a table and chairs, and a small cheffonier, or a set of book-cases.

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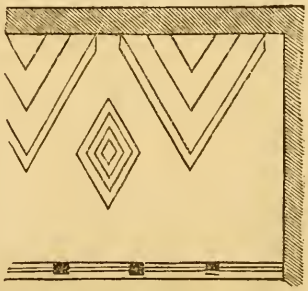

536. *A camellia-house* may be used either as a conservatory, or for growing the plants in pots. It does not require any artificial heat, but there may be an air-tube down the centre, communicating with the open air, and furnished with ventilators, so as to admit a constant current of fresh air through the house at pleasure. Vines may be trained over the roof of this house to produce shade; and if this is not done, there must be a canvas on rollers used for that purpose. It must be observed that camellias do not like either too much sunlight, or too much heat; as the first camellias that were introduced were killed by being kept in a hot-house. A very slight protection from severe cold during frosty weather is all they require; but as they flower in winter and early spring, the flowers, especially the white, are frequently injured by the weather, when the plants are growing in the open air.

Subsect. III.—*Conservatories.*

537. *A conservatory* differs from a green-house in having the plants growing in the free ground, instead of being kept in pots. The conservatory is generally much larger, and more lofty than the green-house, as it is designed for growing large specimen plants; and it is placed either in the flower-garden, or adjoining the drawing-room of the house, when that chances to be on the ground-floor. In other cases, it opens into a library or breakfast-room. Conservatories are of various kinds; sometimes they are contrived to have the glass removed in summer, so as to let the plants kept in them appear to have been grown in the open air; and in other cases, they form what is called a *Jardin d'hiver*, or winter garden, in which the ground, covered with glass, is laid out in walks, and decorated with vases, fountains, &c., like a garden in the open air.

538. *The conservatory at the Grange*, is generally allowed to be a remarkably handsome one. It is 70 ft. long, 46 ft. wide, and 21 ft. high. It is entered by a portico, leading into a vestibule; beyond which the ground is divided longitudinally into three beds. The walks (*k*, in the section, *fig.* 367.) are under an arched covered way, formed of double plates of rolled

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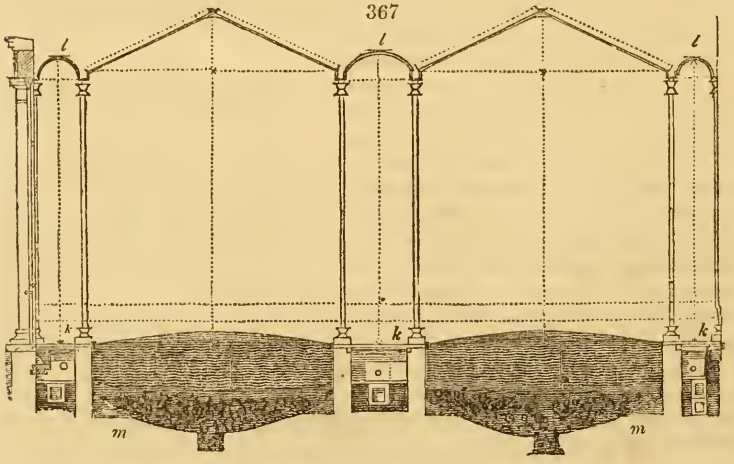

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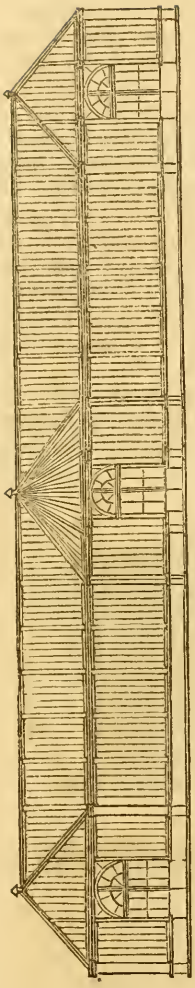

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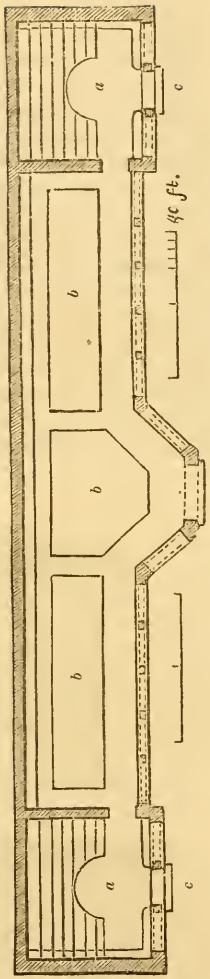

iron (*l*), between which is confined a stratum of air, to prevent the escape of heat. The bottom of the beds (*m*) are of a concave form, that the drainage may go to the centre; under each bed there are three dry wells, filled with large rough flints, laid as hollow as possible; and as the wells were sunk in the chalk, any drainage from them was unnecessary. The hollow (*n*) along the middle was also laid with flints, and the whole bottom covered with a layer of brickbats, &c., about 18 in. deep; on this was laid a thin layer of coarse shingly gravel, still keeping the concave form. The bottom being thus finished, the depth left for soil was in the centre 4 ft. 6 in., as the larger plants were intended to grow there; and on the sides 3 ft. 6 in. The soil was chiefly chopped turf, sandy peat, and loam, mixed with a little gravel; the proportions being changed according to the nature of the plants intended to be grown. Along the back wall there is a border, 18 in. wide, drained and filled with soil in a similar manner to the beds. In this border are planted the scarlet pelargoniums, and other plants trained against the wall, and which are fastened to a wire trellis. At each pilaster, along the front and ends, are small beds of mould, in which are planted climbers that run up the pillars, and which are allowed to hang down from the roof. The walks are of Portland stone, with a kerb of the same, 2 in. high, and 1½ in. broad, rounded off at the top, which not only makes a good finish, but prevents the soil from being washed off the beds in watering. In the vestibule stand large plants in pots, or boxes of orange-trees, camellias, &c.; and in the recesses of the windows, between the pilasters, are stands, 7 in. high, for small plants in pots, under which are ventilators for admitting hot air and steam, either together or separately, into the house at pleasure. This is done by having a hot-air

chamber under the paths, heated by hot water pipes; and by having a contrivance for filling this chamber with steam when required. This is done by having steam-pipes communicating with the hot air-chamber, fitted to the boiler of the hot water apparatus, and furnished with valves, so that the steam can be admitted through them, or cut off at pleasure.

539. *A long narrow conservatory* may be formed, leading from one part of a house to another; or it may serve to mask the kitchen offices, or it may be a means of communication between the drawing-room and the garden. *Figs.* 368., and 369., show a conservatory of this kind, intended to have stages for plants at *a a*, in *fig.* 369., and beds for camellias, Australian acacias, roses, and other similar plants, in the central house *b*, *b*, *b*. Vines, or other climbing plants may be trained under the glass of the roof, particularly if camellias are grown below. If the conservatory is used as a means of communication between two places, the doors *c c*, in *fig.* 369. may be omitted, and the openings may be made at each end. There is no means shown of heating this house; but it may be easily fitted up with hot water pipes.

540. *A semicircular conservatory*, to be placed adjoining one of the living-rooms of a house, is shown in *fig.* 370. There are no means shown of heating it, as it is only intended to hold camellias, orange-trees, and pomegranates,

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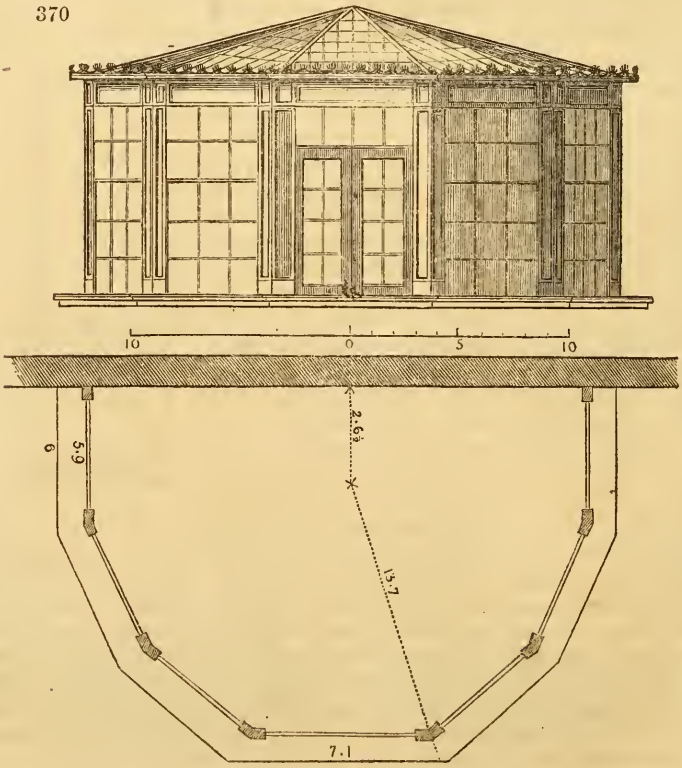
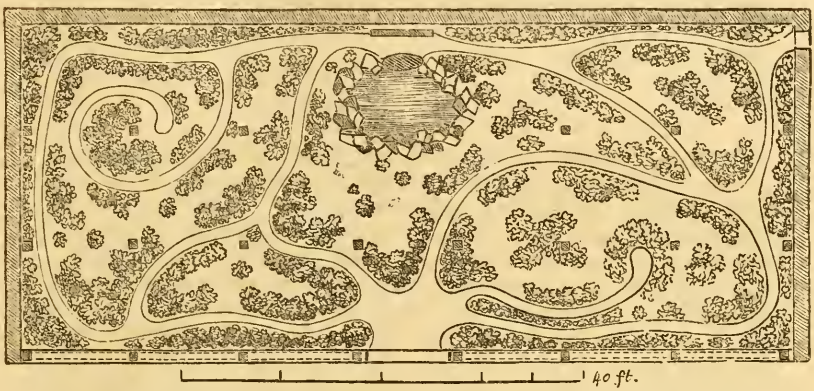


in pots or boxes, which only require a slight protection in winter from severe frosts.

541. *Jardin d'hiver, or winter garden.*—In conservatories of this kind, a piece of ground of from 100 ft. to 500 ft. in length, and of proportionate width, is laid out as a garden (as shown in the ground-plan *fig.* 371.), with



walks, beds of flowering shrubs, baskets of flowers, rockwork, fountains of water, vases, statues, seats, or, in short, any kind of decoration common in garden scenery; and then the whole is covered with glass, and supported by pilasters, which are made hollow to serve as tubes for conveying the rain to cisterns underground, from which the fountains are fed. The pilasters, also, serving as supports, round which climbing plants are twined; other similar plants being trained along the rafters, and suffered to hang down, as in the large conservatory in the Botanic Garden, in the Regent's-park. The outward elevation of houses of this kind is generally very simple, as their claim

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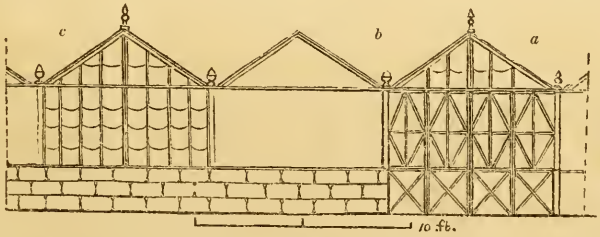

for admiration depends on their interior, which is generally very splendid. The appearance of a garden of this kind may be easily imagined. The mode of heating is generally by hot air-chambers, or hot water pipes carried under the walks, with gratings at regular intervals to admit the heat into the house; and a very moderate

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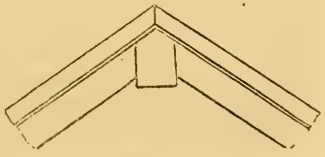

degree of heat is generally found enough, unless tropical plants are to be grown. The roof may consist of three spans, as shown in *fig.* 372., each terminating in an angle, as shown in *fig.* 373., on the apex of which are fixed the ornaments represented in *figs.* 374. and 375. In *fig.* 372., *a* is the door, *b* the front without the glass to show the frame-work, and *c* the other part of the front, with the glass in it to show the form of the panes.

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Subsect. IV.—*Hothouses.*

542. *Hothouses* differ from green-houses, chiefly in requiring more heat, as they are intended for the growth of tropical plants; whereas green-houses are intended for the plants of climates only a little warmer than our own. Hence the temperature of a hothouse should be several degrees higher than that of a green-house; the lowest heat being from 55° to 60° even at night, and rising in the middle of the day, partly by sun heat, to 80° or 90°, or higher during summer. The great difference between the heat of the night and the day, is one of the late improvements in horticulture. Formerly gardeners kept their stoves at nearly the same heat night and day, though it was clearly different from the natural habits of the plants, as the nights in tropical climates are well known to be very much colder than the days. There are many varieties of hothouses, but the most useful are the stove, the orchideous-house, and the aquarium.

543. *The moist stove* has generally a lean-to roof, as shown in *fig.* 376.; and those which were built some years ago had always a brick pit for tan or earth in the centre of the house. Into this pit the pots were generally plunged; but sometimes the bed was covered with a slate on which the pots were set. The pots were also occasionally set on brick flues. Now, when there is a pit in the centre, it is generally covered with brick, and either contains tanks of hot water, or hot water pipes, or flues. Sometimes it is a hot air-chamber, furnished with gratings that can be closed by slides, so that hot air can be admitted into the house at pleasure; observing that whenever hot air is admitted into a plant house, by the Polmaise, or any other mode of heating, there must be open tanks or cisterns introduced to give moisture to the air. There should also always be two or three ventilators, or more, as near the roof as possible, to let off the air that has passed through the house; and if these ventilators are only of moderate size, there is no danger of any cold air entering by them; as the volume of hot air which is continually rising to the roof, will either be sufficient to repel the cold air, or at least it will mix with it, and warm it sufficiently to prevent any danger resulting to the plants.

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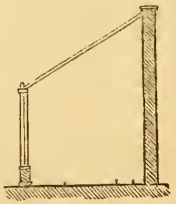

544. *The dry stove* only differs from the moist stove in having less moisture, as it is intended for the growth of the cactacæ, and other succulent plants. In some cases there is a kind of stage for the pots, like a green-house; but generally they are kept on shelves and flues.

545. *The aquarium.*—This kind of house is more rare than any other, as

the tropical aquatics are generally grown either in the orchideous house, or the common stove. As, however, some very interesting plants belong to this class, and as they should be near the glass, so as to have a strong light, which they cannot possibly have in an orchideous house, it is best, if practicable, to have a house set apart for them. Houses for aquatic plants are generally built, with a large cistern in the middle, and a walk round, as in the aquarium at Kew. A low, span-roofed house, is considered the best; and it should be about 8 ft. high in the centre. The cisterns may be of either slate or stone, and they should be furnished with a waste-pipe at one end, and a supply pipe at the other, as a regular supply of fresh water is essential to the health of the plants. The house should be heated with two sets of hot water pipes, the upper one being a little above the water in the cisterns. When there are two cisterns, only one need be heated by having a pipe pass through it.

546. *The orchideous house* may be of any given length, and 12 ft. 6 in. wide. There need not be more than one walk, which may be composed of pieces of wood, nailed to sleepers, and be 3 ft. 6 in. wide. The house may be heated by flues, enclosed in hot air chambers, which should rise 2 ft. 6 in. above the level of the floor; and it should contain three leaden cisterns, one at each end 3 ft. square, and one in the centre 8 ft. long, by 3 ft. wide, the latter being filled with aquatic plants. The height of the back wall may be 11 ft. 6 in., and that of the front wall 2 ft. 6 in. On the top of the front wall may be an elevation of glass, 2 ft. 6 in. high, making the front 5 ft. high in all. In the front of the house, in the open air, may be a small pit for half hardy species.

547. *Plant houses and forcing houses comprised in one range.—Figs.* 377. and 378. are intended to represent a range of plant houses and pits, to be erected in a square of 100 ft., and to include all the houses necessary for the supply of a villa, arranged in such a manner as to render them ornamental, and easy of access. In *fig.* 377., *a a*, are the entrances; *b b*, the boilers; *d d*, the vineries; *e e*, pine stoves, with cucumbers in boxes, on a trellis over the path; *f*, orchideous house; *g g*, peach houses; *h*, green-house; *i*, plant stove; *l*, early strawberry, and late melon-house; *m*, early melon-house; *n* and *o*, nursing pine stoves; *p*, miscellaneous pits; *q*, passage containing the lining for heating the pits; *s s*, paved passages for inspecting the different houses; *u*, potting shed; *x*, tool shed; *y*, fruit-room; and *z z*, bedroom and kitchen for the foreman, or assistant gardener, who attends to the houses. *Fig.* 378. is an isometrical view of the whole group. The plan of having so many houses together is a very economical one, and much less heat is required than if the houses stood separately; as the warm, dry walls of one apartment materially assist to warm and dry the walls of another: and it is obvious that the destination of these houses may be changed at pleasure, and that where pines or peaches are not grown, the houses intended for them may be used for ornamental plants or vines. Peaches, requiring a comparatively low temperature, much light, and a free circulation of air, and therefore the house set apart for them would be very suitable for growing pelargoniums or heaths, if peaches are not grown. The nursing pine-pits would be very suitable for striking cuttings, or keeping stove plants during the winter; and in that case they would not need any dung linings. The vineries should have a leaden pipe, three-fourths of an inch in diameter, perforated with holes from the upper side, about half a line in diameter, and one foot apart, conducted

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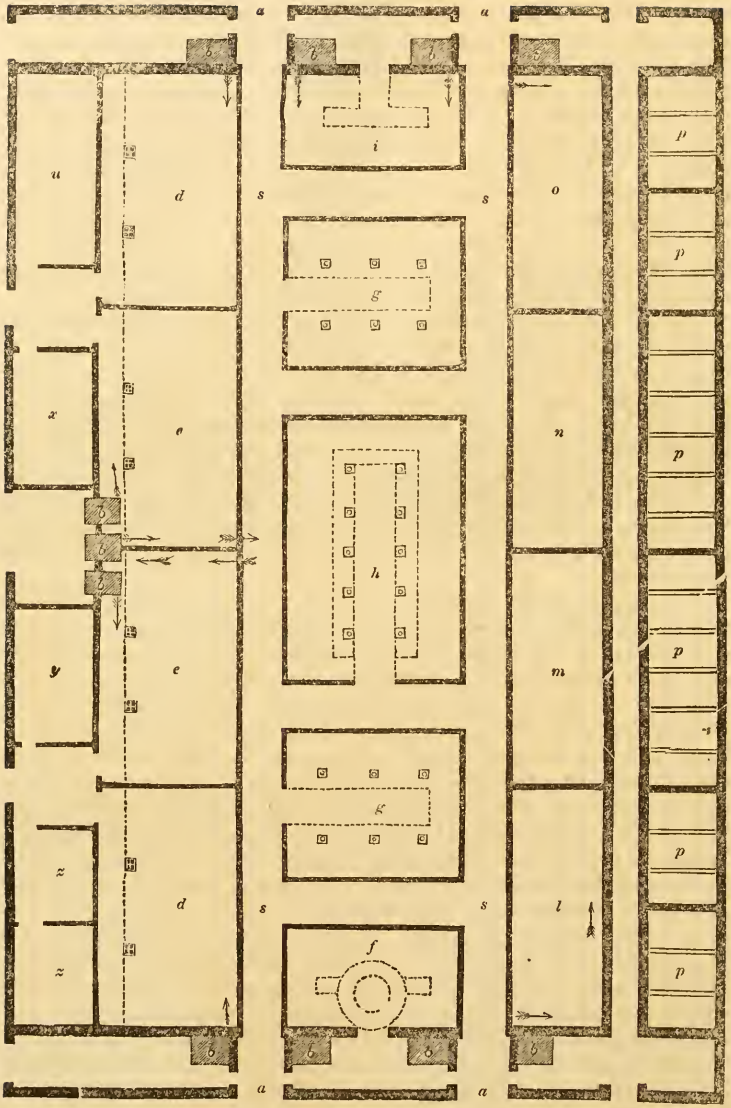

all round, about 1 in. above the uppermost hot water pipe, and connected with a cistern, a little elevated, for the purpose of raising vapour, by moistening the hot pipes. The orchideous house may have ferns and mosses on the back, and over a circular stand of bricks in the centre; and the stage round the

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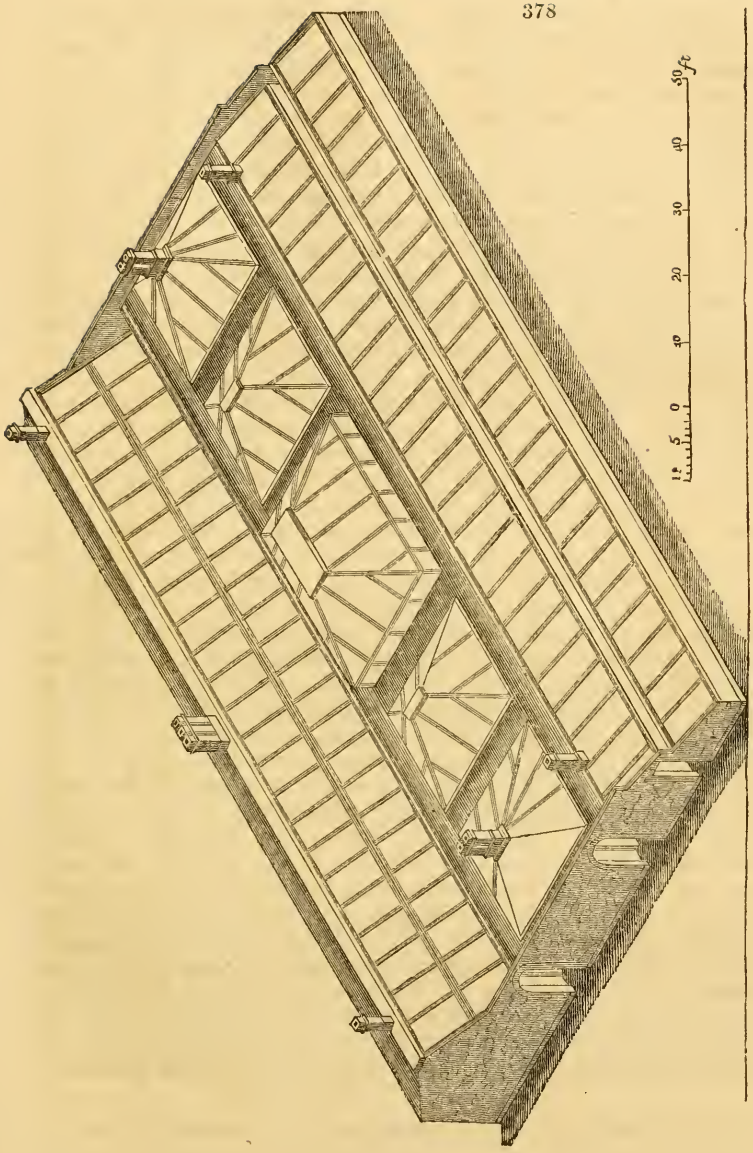

front and ends should be cemented so as to hold water, in which pans may be placed for the purpose of putting the orchideous pots upon them. All the walks between the houses should be of stone, 4 ft. wide, raised an inch in the middle, with gratings in the gutters, 9 ft. apart. The roofs are to be sup-

ported on hollow cast-iron pillars; and all the walls on both sides, except the outer wall, may be lath and plaster, or glass, so as to allow persons passing along the walks to see into the houses without entering them. The fruit-room should have a ventilator at the top, and a window in front with a wire cloth screen, a wooden floor, and a small charcoal stove at one end; and it should be fitted up with two tiers of shelves 18 in. apart, leaving a walk in the middle, 4 ft. wide. The tool shed is to be fitted up with a rack, in which all the long-handled tools should be placed, with the handles inwards, so that they can be selected from, and inspected at a glance; and there should be a few large drawers, in which small tools, such as hammers, &c., may be kept; this shed should have a window in front, and a loft over it. The potting shed should be paved with stone, it should contain a table 9 ft. long, 2 ft. 9 in. broad, and 2 ft. 6 in. high; and it, also, should have a window in front, and a loft over. The potting shed should have either a pump, or water laid on by pipes, with waste-pipe, &c., for the convenience of washing the flower-pots; and there should be a water tank built with bricks and cement, attached to each house. In arranging the plan for these houses attention was paid to their probable appearance in an ornamental point of view, as well as to their utility. A house of grapes looks best from the front, when the upper side of the leaves above the trellis, and the broad side of the clusters below, can be viewed at once: peaches look best when seen on a line with the eye; and flowering plants should be in the same position. Cucumbers are most ornamental when trained to rafters, with the fruit hanging down. Pine-apples should be arranged like an amphitheatre, the tallest at the back; and melons, though they should be looked down upon, should have the fruit raised a little above the foliage. Houses for forcing fruit are generally considered eyesores in gardens; objects of utility, it is true, but which should be concealed as much as possible. By attending, however, to limits given above, forcing houses need no longer be considered as blemishes and necessary evils, but they may be made positively ornamental.

The houses were made to join each other to save heat; for it is obvious that if each had stood separately exposed to the effects of the weather, much more fuel would be required to heat the whole, than by the plan proposed; according to which the warm dry walls of one house serve to dry the walls of another. As it is also known that light and heat pass through glass in greater porportions, and to more profitable purpose, when the rays make right-angles with the surface of the glass, the roof should be elevated to an angle equal to the latitude of the locality. Peach-trees require a comparatively low temperature, much light, and a free circulation of air; therefore, a span-roofed house, running north and south, will be found most suitable, and the trellis for the trees should be circular at both ends. The orchideous house may have ferns and mosses at the back, and over a circular brick stand in the centre.

BOOK IV.

LISTS OF ORNAMENTAL PLANTS SUITABLE TO VILLA GARDENS, WITH THEIR CULTURE.

548. *The plants grown in the open air in villa gardens* may be divided into the *ligneous*, including the trees and shrubs; and the *herbaceous*, including the annuals, the biennials and perennials, and the bulbs and tubers. The herbaceous plants being those most generally cultivated in villa gardens, we shall give them most in detail, referring to the lists of ornamental trees and shrubs already given in many of the preceding pages of this work, but more particularly in pages 68, 99, 100, 101, 147, 148, 262, 263, 291 to 293, 330 to 338; and from these lists selections may easily be made. The culture of trees and shrubs will be found by reference to the INDEX, in various places throughout the work.

SECTION I.

HERBACEOUS PLANTS.

549. *The term "herbaceous plants,"* is generally applied by gardeners only to perennials; but, in fact, it belongs to all plants the stems of which are not woody, but are composed principally of what is called cellular tissue. Plants of this kind are subdivided into those with fibrous roots, and those with bulbous or tuberous roots; though the latter are, properly speaking, underground stems, with fibrous roots attached. The fibrous-rooted plants are again divided into annuals, biennials, and perennials; and under these heads we shall consider them.

SUBSECT. I.—*Ornamental Annuals.*

550. *Annual plants* are, properly speaking, plants which only live one year; but gardeners generally include under the term all that flower the same year that they are sown. Many of the plants of warm climates will do this in England, and die in winter, being killed by the first frost, which will live many years in their native climes, or even when they have the protection of a green-house in England. Thus, for example, the common mignonette, which is always considered as an annual in England, is a shrub in its native country, Barbary; and it may be trained into the appearance of a small tree in this country, by keeping it in a green-house and pinching off the lower side shoots as they appear. Besides the common annuals, which are sown in April or May, there are what are called the Californian annuals, which are sown in autumn, as soon as the seeds are ripe, and which flower in *very* early spring. There are also the half hardy annuals, which are sown in a frame on a hotbed; and there are tender annuals, which are raised on a hotbed, and flowered in the green-house or the stove.

551. *The culture of annuals* embraces their sowing, their thinning or transplanting, and their training; and these operations are nearly the same whether the plants are hardy, half hardy, or tender; the only difference being, that the hardy plants will grow freely if sown in the open air where they are intended to remain, while the half hardy kinds must be raised on a hotbed, and transplanted into the open ground in May or June; and the tender kinds must be kept in pots, and only placed in the open air during the warmest part of summer.

552. *When the seeds of annuals are sown*, the ground should first be made firm by pressing it with the saucer of a flower-pot, or the back of the spade; the seeds should then be sprinkled thinly over the ground, and just covered with fine earth, which should be slightly pressed down over them. When they come up, if they appear too thick, they should be thinned out so as to leave each plant standing apart; the distance at which they are left from each other varying, of course, according to the strength and habit of growth of the plants. The plants of some kinds of annuals will bear transplanting after they have been taken up in thinning, but generally they are not worth the trouble of replanting. The seeds when sown are often destroyed by birds; but this may be prevented by turning a flower-pot over each patch till the seeds have germinated, taking care, however, to remove it as soon as the plants begin to grow, lest they should be drawn up by the shelter thus afforded, and become weak. Snails and slugs are dangerous enemies to young and tender annuals, and care should be taken to search for them early in the morning and late in the evening; or to destroy them by watering the ground with lime-water, so weak as not to disfigure the plants.—(*Ladies' Companion to the Flower-garden.*)

553. *List of ornamental annuals which should be sown in the open ground towards the end of March or the beginning of April:*

Name.	*Country.*	*Colour.*	*Size.*
Alyssum calycinum (*Sweet Alyssum*)	England	White	Dwarf.
Amaranthus caudatus (*Love-lies-bleeding*)	East Indies	Red	Tall.
Varieties		Pale Yellow	Tall.
——— hypochondriacus (*Prince's Feather*)	Virginia	Red	Tall.
Variety		Greenish White	Tall.
Anagallis arvensis (*Pimpernel*)	England	Flesh colour	Dwarf.
——— cærulea	England	Blue	Dwarf.
——— grandiflora	East Indies	Red	Dwarf.
Anthemis arabica	Barbary	Golden Yellow	Dwarf.
——— valentina	Spain	Yellow	Dwarf.
Argemone albiflora (*Prickly Poppy*)	Mexico	White	Moderate.
——— mexicana	Mexico	Yellow	Moderate.
Aster Tradescanti (*Michaelmas Daisy*)	N. America	White or Blue	Tall.
Blumenbachia insignis	Monte Video	White	Dwarf.
Borkhausia, or Crepis, rubra (*Pink Hawk-weed*)	Italy	Pink Lilac	Moderate.
Campanula Speculum (*Venus's Looking Glass*)	S. of Europe	Purple	Dwarf.
Centaurea Cyanus (*Corn Blue-bottle*)	Britain	Blue	Moderate.
——— moschata (*Sweet Sultan*)	Persia	Pink	Moderate.
——— suaveolens (*Yellow Sultan*)	Levant	Yellow	Moderate.
Cerinthe major (*Honeywort*)	S. of France	Yellow and Purple	Tall.
Chrysanthemum carinatum	Barbary	White and Purple	Moderate.
——— coronarium	Sicily	Yellow	Tall.
Convolvulus major	S. of Europe	Purple and White	Climbing

Name.	*Country.*	*Colour.*	*Size.*
Convolvulus minor	S. of Europe	Blue	Dwarf.
Glaucium luteum *(Horn Poppy)*	Britain	Yellow	Moderate.
Helianthus annuus *(Sunflower)*	Peru	Yellow	Tall.
Helichrysum bracteatum *(Yellow Everlasting)*	New Holland	Yellow	Moderate.
——— macrantlum	Swan River	Pinkish	Tall.
Hibiscus Trionum *(Bladder Ketmia)*	Italy	Cream colour and Purple	Moderate.
——— africanus	Africa	Pale Yellow and Brown	Moderate.
Impatiens Noli me tangere *(Touch-me-not)*	England	Yellow and Red	Tall.
——— pallida *(Jumping Betty)*	N. America	Pale Orange	Moderate.
Lathyrus odoratus *(Sweet Pea)*	Sicily	Various	Tall.
Lavatera trimestris *(Tree Mallow)*	S. of Europe	Lilac	Tall.
Linum usitatissimum *(Flax)*	Britain	Blue	Tall.
var. alba		White	Tall.
Loasa nitida	Chili	Yellow	Moderate.
——— aurantiaca	Chili	Orange	Climbing.
Lupinus albus *(White Lupine)*	Levant	White	Tall.
——— luteus *(Yellow Lupine)*	Sicily	Yellow	Moderate.
——— pilosus *(Rose Lupine)*	S. of Europe	Pink	Moderate.
——— elegans	Mexico	Blue	Tall.
Lychnis læta	Portugal	Pink	Dwarf.
Malope grandiflora	Barbary	Crimson	Tall.
——— trifida	Barbary	Crimson	Moderate.
var. alba		White	Moderate.
Nicandra physalöides *(Kite flower)*	Peru	Purple	Tall.
Nicotiana Tabacum	Virginia	Pink	Tall.
Nigella damascena *(Love in a mist)*	S. of Europe	Blue	Moderate.
——— hispanica	Spain	Blue and White	Tall.
Nolana atriplicifolia	Peru	Blue and White	Spreading.
Œnothera spectabilis *(Evening Primrose)*	Mexico	Yellow	Tall.
——— tetraptera	Mexico	White	Spreading.
Papaver Rhœas *(Corn Poppy)*	Britain	Red	Tall.
——— somniferum *(Opium Poppy)*	England	White	Tall.
Phacelia congesta	Texas	Blue	Moderate.
——— tanacetifolia	California	Purple	Moderate.
Reseda odorata *(Mignonette)*	Barbary	Greenish	Dwarf.
Ricinus communis *(Palma Christi, or Castor-oil plant*	East Indies	Green	Tall.
Rudbeckia amplexifolia	Louisiana	Yellow	Tall.
Salvia Horminum *(Purple Clary)*	S. of Europe	Purple	Moderate.
var. rubra *(Red-topped Clary)*	S. of Europe	Red	Moderate.
Sanvitalia procumbens	Mexico	Yellow	Dwarf.
Saponaria Vaccaria *(Soapwort)*	Germany	Purple	Dwarf.
——— calabrica	Calabria	Red	Dwarf.
Scabiosa atropurpurea *(Sweet Scabious)*	Europe	Dark Purple	Tall.
Silene Armeria *(Lobel's Catchfly)*	England	Pink	Moderate.
var. alba *(Yellow Hawkweed)*	Peru	White	Moderate.
Tolpis, or Crepis, barbata	S. of France	Yellow	Moderate.
Tropæolum majus *(Garden Nasturtium)*	Peru	Orange and Yellow	Climbing.
var. atrosanguineum		Dark Red and Orange	Climbing.

554. *List of hardy Californian annuals, with their colour and size.*—The seeds of all these plants may be readily obtained in the seed-shops, and they should

all be sown in autumn, if they are to flower in spring; as if sown in spring they will not flower till late in the summer. "About an inch in thickness of very light soil should be laid on a hard surface of rock or gravel, in any obscure part of the garden, and in this the seeds should be sown the first week in September. In March or April, according to the season, when the flower-beds and borders have been dug over and prepared, the young seedlings should be taken up by spadesful and laid over the bed, filling up all the interstices between the patches with earth, so as to make the surface even."—(*Ladies' Companion to the Flower-Garden.*)

Name.	*Colour.*	*Size.*
Bartonia aurea	Yellow	Spreading.
Calliopsis, or Coreopsis, Drummondii	Yellow and Brown	Tall.
——— tinctoria	Yellow and Brown	Tall.
Clarkia elegans	Reddish Purple	Tall.
——— ——— var. rosea	Pink	Tall.
——— pulchella	Purple	Tall.
——— ——— var. alba	White	Tall.
Collinsia bicolor	Lilac and White	Moderate.
——— grandiflora	Blue and Purple	Dwarf.
Erysimum Perowskianum	Orange	Tall.
Eschscholtzia californica	Yellow	Spreading.
——— ——— crocea	Orange	Dwarf.
Eutoca multiflora	Pale Lilac	Dwarf.
——— Franklini	Pale Blue	Dwarf.
——— viscida	Dark Blue	Coarse growing.
Gilia achilleæfolia	Purple	Dwarf.
——— bicolor	White and Brown	Dwarf.
——— capitata	Blue	Tall.
var. alba	White	Tall.
——— tricolor	White, Brown, and Lilac	Dwarf.
Godetia lepida	Purple and Crimson	Dwarf.
——— Lindleyana, or roseo-alba	White and Rose	Moderate.
——— purpurea	Purple	Tall.
——— Romanzovii	Blue	Dwarf.
——— vinosa	Pale Lilac	Dwarf.
Lasthenia californica	Yellow	Spreading.
Leptosiphon densiflorus	Pale Purple	Dwarf.
——— androsaceus	White	Dwarf.
Limnanthes Douglasii	Yellow and White	Spreading.
Lupinus nanus	Blue	Dwarf.
——— affinis	Blue	Dwarf.
——— micranthus	Purple and Blue	Dwarf.
Nemophila atomaria	White and Black	Moderate.
——— aurita	Purple	Dwarf.
——— discöidea	Very Dark	Moderate.
——— insignis	Bright Blue	Dwarf.
——— phaceliöides	Lilac	Moderate.
——— maculata	White and Purple	Moderate.
Platystemon californicus	Cream colour	Moderate.

555. *List of other ornamental annuals, which should be sown in autumn:*

Name.	*Country.*	*Colour.*	*Size.*
Adonis autumnalis	Britain	Scarlet	Moderate.
Delphinium Ajacis	Crimea	Different colours	Tall.
——— nanum			Dwarf.

Name.	*Country.*	*Colour.*	*Size.*
Iberis umbellata	Candia	White and Purple	Moderate.
——— coronaria		White	Tall.
Malcomia maritima	South of Europe	Lilac	Dwarf.
Viola tricolor	Europe	Various colours	Dwarf.

556. *Culture of half-hardy annuals.*—"The seeds may be sown either in plunged pots, or in a bed of earth on a slight hot-bed, in February or March; and after they have come up they may be pricked out into plunged pots, or into the earth covering another slight hot-bed, where they may remain till the beginning of May, when they should be transplanted into the beds or borders in the open garden where they are finally to remain. In most cases, however, it is not worth while to prick out the plants in a second hot-bed; and sometimes they may be sown in pots, and thinned out to two or three plants in a pot; and when they have grown two or three inches high, the ball of earth, and the plants in it, may be turned out into the open border. This mode is well adapted for strong clayey soils, because when plants from a hot-bed are transplanted into such soils, they commonly receive a severe check; whereas when they are turned out with balls, provided the soil round them is settled by a good watering, they receive no check whatever. The soil in which half-hardy annuals are raised, should be light and rich, because it is only in such a soil that the tender seedlings will grow vigorously, and produce numerous fibrous roots, without which they would produce but little effect when turned out into the open garden."—(*Ladies' Companion to the Flower-Garden*, fifth edit., p. 8.)

557. *List of half-hardy annuals*, which should be raised on a hotbed in March, and planted out in May. Those which are not marked with a star may be sown in the open ground in April or May, but when thus treated they do not flower till autumn.

Name.	*Country.*	*Colour.*	*Size.*
*Ageratum mexicanum	Mexico	Blue	Tall.
*Amaranthus tricolor	East Indies	Leaves variegated	Moderate.
Argemone Barclayana	Mexico	Orange	Moderate.
——— sulphurea	Mexico	Pale Yellow	Moderate.
*Aster sinensis var. (*China aster*)	China	Red and Blue	Tall.
——————— nana	Hybrid	White and Purple	Dwarf.
——— tenellus	Cape of Good Hope	Blue	Dwarf.
*Balsamina hortensis	East Indies	Various	Moderate.
*Brachycome iberidifolia	Swan River	Blue	Dwarf.
——————— alba		White	Dwarf.
Cacalia sonchifolia	East Indies	Scarlet	Moderate.
*Calandrinia grandiflora	Chili	Purple	Moderate.
——— speciosa	California	Red	Dwarf.
*——— discolor	Chili	Purple	Moderate.
Calendula pluvialis	Cape of Good Hope	White and Purple	Moderate.
——— hybrida	Cape of Good Hope	White	Moderate.
Campanula Lorei, and varieties	S. of Europe	Purple	Dwarf.
*Celosia cristata (*Cock's-comb*)	China	Red	Moderate.
——————— nana			Dwarf.

*Celsia, or Alonsoa, urticæfolia, C. cretica, and C. orientalis.

Name.	*Country.*	*Colour.*	*Size.*
*Clintonia pulchella	California	Blue	Dwarf.
Dianthus sinensis var. flore-pleno *(Chinese Pink)*	China	Red	Dwarf.
*Didiscus cæruleus	New Holland	Blue	Tall.
Helichrysum bracteatum	New Holland	Yellow	Tall.
——— macranthum	Swan River	Pink	Tall.
*Heliophila trifida	Cape of Good Hope	Blue	Dwarf.
Hibiscus africanus *(Bladder Ketmia)*	Africa	Yellow	Tall.
Ionopsidium acaule	Portugal	Lilac	Dwarf.
Ipomœa coccinea	Carolina	Scarlet	Tall.
*Kaulfussia amellöides	Cape of Good Hope	Blue	Dwarf.
Lathyrus odoratus *(Sweet Pea)*	Sicily	Various colours	Tall.
Loasa lateritia	Tucuman	Red	Tall.
——— ambrosiæfolia	Lima	Yellow	Tall.
*Lobelia gracilis	New S. Wales	Blue	Dwarf.
*——————— alba		White	Dwarf.
*——— heterophylla	Swan River	Blue	Moderate.
*——— ramosa	Swan River	Blue	Moderate.
Lotus jacobæus	Cape Verd	Dark Brown	Dwarf.
Lupinus mutabilis	Peru	Blue and Yellow	Tall.
——— Cruckshanksii	Peru	Blue and Yellow	Tall.
*Matthiola annua *(Ten-week Stock)* Varieties		White, Purple Red, etc. etc.	Moderate.
Nigella hispanica *(Love in a mist)*	South of Europe	Blue	Tall.
*Nolana atriplicifolia	Peru	Blue and White	Dwarf.
——— prostrata	Peru	Pale Blue	Dwarf.
*Phlox Drummondii	Texas	Pink	Moderate.
Polygonum orientale *(Garden Persicaria)*	East Indies	Pink	Tall.
*Rhodanthe Manglesii	Swan River	Pale Rose	Dwarf.
*Salpiglossis sinuata	Peru	Various colours	Moderate.
Scabiosa atropurpurea *(Sweet Scabious)*		Purple	Tall.
*Schizanthus pinnatus	Chili	White and Red	Tall.
*——— retusus	Chili	Yellow and Red	Tall.
Schizopetalon Walkeri	California	White	Dwarf.
*Senecio elegans fl pleno *(Purple Ragwort or Jacobæa)*	Cape of Good Hope	Purple	Tall.
Tropæolum peregrinum *(Canary-bird flower)*	Peru	Yellow	Tall.
Viscaria oculata	Algiers	Pink	Tall.
Zinnia elegans coccinea, and other kinds	Mexico	Scarlet	Tall.

It will be observed that some of these, such as the balsam, the cock's-comb, the globe amaranth, and the Amaranthus tricolor, are usually called tender annuals, and they should always be kept in pots, though the pots may be set in the open air while the plants are in flower.

Subsect. II.—*Ornamental Biennials and Perennials.*

558. *Biennials* are generally classed with perennials in gardening books, because both of them when raised from seeds do not flower till the second year; and though the biennials are said to die after they have ripened their seeds, this is very rarely the case. "Brompton stocks, hollyhocks, wall-flowers, snapdragons, and Canterbury-bells, are generally considered biennials,

though some of them live three or four years. Biennials should be sown in March or April, thinned out in May, and transplanted in September to the place where they are to flower the ensuing year. A little earth should be taken up with the roots, when they are transplanted, and they should be well watered, and shaded for a day or two, till they are thoroughly established. Those kinds which require a peculiar soil, should have pits prepared for them about a week before they are transplanted, that the earth may have time to settle." (*Ladies' Companion to the Flower-Garden*, 4th ed., p. 32.) Hollyhocks should have the pits prepared for them at least a foot square and deep, and they should be filled with a rich soil composed of loam and the remains of an old hotbed. It would be useless to give lists of biennials, as the genera and species are so few; and the names of the varieties are so innumerable, and so continually changing. As an example of this, in one nursery there are nearly eighty various kinds of snapdragon; and the stocks and hollyhocks are of every shade in their respective colours, from the darkest to the brightest tints. The best way is, when there is time to do so, to visit the nurseries when the plants are in flower, and to procure young plants of the kinds preferred.

559. *Perennials, or herbaceous plants*, as they are called by gardeners, are those permanent plants which are not woody, but which generally die down to the ground every year, and spring up again the year following. There are some, however, which are called evergreen perennials, which never die down to the ground, such as pinks, carnations, several kinds of saxifrage, &c. Perennials have the great advantage over annuals and biennials, that they do not require renewal from seed, but are propagated by division of the root or cuttings of the stem. The greater part of the plants which ornament the borders of gardens are perennials, including under this term bulbs and tubers. The fibrous-rooted perennials should be taken up and divided when they are growing too large; and even when division on this account is not necessary, most of the kinds are benefited by taking up and replanting in fresh situations occasionally, on the principle of the rotation of crops. All plants require certain salts, and other mineral substances which they find in the ground; and when they have taken up all within their reach, which they will do in the course of a few years, the ground in which they grow becomes unfit for them. Nature has provided a remedy for this by elongating the roots of all perennial plants, whether ligneous or herbaceous, every year; and this is sufficient to prevent trees and shrubs in permanent plantations from being injured; but from the constant digging, &c., in a garden, perennial herbaceous plants are very seldom permitted to extend their roots to a sufficient distance to find suitable soil; and they are, therefore, benefited by taking up and replanting, or laying down decayed leaves or fresh soil over their roots. The season for taking up and replanting perennial plants should be either in autumn, after they have done growing, or in spring, before they begin to grow; and if the soil about the roots looks black and saturated with moisture, or, as gardeners express it, "sour," the roots should be washed quite clean before replanting. Where the roots are to be divided, it may be done, if they are large, with the spade, or, if they are small, with a knife: and, at all events, they should be cut smooth, and trimmed (that is, all the bruised parts removed) with a sharp knife, before replanting.—(See *Ladies' Companion to the Flower-Garden*, fifth edit., p. 218.)

560. *List of ornamental perennial herbaceous plants to be planted in borders, &c.:*

	Time of Flowering.	*Colour.*	*Height.*
Aconitum variegatum *(Wolf's-bane)*	July	White and Blue	3 to 4 ft.
——— Napellus *(Monk's-hood)*	——	Blue	——
Eranthis hyemalis *(Winter Aconite)*	February	Yellow	3 in.
Cyclamen repandum	April	Red	——
——— coum	Feb. and Mar.	——	——
Cynoglossum cœlestinum	August	Blue and White	2 ft.
Cypripedium Calceolus	May and June	Yellow	1 ft.
Delphinium grandiflorum flore pleno	July	Blue	2 to 3 ft.
——— azureum *(Siberian Larkspur)*	——	——	——
Dianthus barbatus *(Sweet William)*	June & July	Various	——
——————— var.	——	Rosy Purple	1 ft.
Dielytra formosa	June	Rosy Lilac	9 in.
Dictamnus Fraxinella	——	Purple	2 ft.
Digitalis aurea	July to Sept.	Orange	2 ft.
——— purpurea *(Common Foxglove)*	——	Purple	——
Echinops spinosus *(Globe Thistle)*	August	White	3 ft.
——— sphærocephalus	——	Blue	3 to 4 ft.
Dracocephalum grandiflorum	August	Blue	1 ft.
——— speciosum	——	Pink	12 to 18 in.
Epimedium grandiflorum	April	Light Purple	1 ft.
——— violaceum	——	Violet	——
Euphorbia Cyparissias	June	Greenish Yellow	1 to 2 ft.
Linum monogynum	June	White	2 ft.
——— montanum	——	Blue	——
Linaria purpurea *(Purple Toadflax)*	July	Blue	3 ft.
——— dalmatica	——	Yellow	3 ft.
Lithospermum purpureo-cæruleum	May	Purple	1 ft.
Lobelia splendens	July	Scarlet	3 ft.
——— fulgens	——	——	——
Lythrum Salicaria *(Willow herb)*	——	Purple	——
Lychnis chalcedonica	June	Scarlet	3 ft.
——— fulgens	——	——	1 to 2 ft.
Mimulus alatus	July	Purplish Blue	1 ft.
——— guttatus	June	Yellowish Brown	1 to 2 ft.
Pæonia albiflora *(Pæony)*	May	White and Pink	2 ft.
——— tenuifolia flore-pleno	——	Red	2 ft.
——— officinalis	——	——	——
Pentstemon speciosum	August	Blue	2 to 3 ft.
——— gentianöides coccinea	July	Reddish Purple	——
——— ovatum	——	Purple	3 ft.
Phlox divaricata	June	Purplish Blue	9 in.
——— suaveolens	August	White	1 to 2 ft.
——— Van Houttei	——	Purplish White	2 to 3 ft.
Potentilla insignis	July and Aug.	Yellow	2 ft.
——— atrosanguinea	July	Blood Red	1 to 2 ft.
Pulmonaria azurea	May	Blue	1 ft.
——— officinalis	——	Red	1 ft.
Salvia hians	June, July	Blue and White	2 ft.
——— canescens	July	Lilac	——
Solidago humilis *(Dwarf Golden Rod)*	——	Yellow	1 ft.
——— reflexa	August	——	3 ft.
Spiræa Ulmaria multiplex	——	White	2 ft.
Statice Gmelini	July	Purple	1 to 2 ft.
——— bicolor	——	Blue and White	——

	Time of Flowering.	*Colour.*	*Height.*
Thermopsis fabacea	June	Yellow	1 to 2 ft.
Trollius europæus *(Globe Flower)*	May	——	1 ft.
——— asiaticus	——	Orange	——
Veronica maritima	August	Purple	2 ft.
——— gentianöides	June	Whitish	1 ft.
——— hybrida	August	Blue	1 ft.
Viola odorata *(Violet)*	February	Blue	6 in.
——— odorata alba	——	White	——
——— neapolitana	——	——	——
Campanula persicifolia	July, August	Blue	2 to 3 ft.
——— speciosa	May, June	Purple	2 ft.
——— pyramidalis	July and Aug.	Blue	3 ft.
Asclepias tuberosa	August	Orange	1 to 2 ft.
——— incarnata	July	Flesh	3 ft.
Aquilegia glandulosa *(Large Blue Columbine)*	June	White and Blue	1 to 2 ft.
——— Skinneri	——.	Scarlet and Green	——
——— canadensis	——	Red and Orange	——
Arabis rosea	March	Rose	6 to 9 in.
——— albida *(Wall Cress)*	May and June	White	——
Anemone coronaria	May	Various	——
——— vitifolia	July	White	1 to 2 ft.
——— japonica	August	Purple	——
Apocynum androsæmifolium	——	Pinkish	2 ft.
Orobus vernus	May	Purple	1 ft.
Coronilla minima	July	Yellow	1 ft.
Corydalis tuberosa	March	Purple	6 in.
——— lutea	May to Oct.	Yellow	——
Chelone barbata	July	Scarlet	3 to 4 ft.
Coreopsis tenuifolia	——	Yellow	1 to 2 ft.
Dodecatheon Meadia *(American Cowslip)*	April and May	Purple	1 ft.
Eryngium Bourgati	July	Pale Blue	2 ft.
——— alpinum	——	——	——
Gentiana acaulis	April and May	Blue	4 in.
——— verna	——	——	——
Geranium sanguineum	July	Red	1 ft.
——— ibericum	——	Blue	1 to 2 ft.
Helleborus niger *(Christmas Rose)*	Winter	White	6 in.
Hedysarum coronarium *(French Honeysuckle)*	June	Crimson	3 ft.
Geum coccineum	July	Scarlet	2 ft.
Hepatica triloba and its varieties	April	Various	4 in.
Œnothera macrocarpa *(Evening, or Tree Primrose)*	June, July	Yellow	6 ft 12 in.
Lupinus polyphyllus *(Tree Lupine)*	June, July	Blue	2 to 3 ft.
——————————— albiflorus	——	White	——

Subsect. III.—*Ornamental Bulbs and Tubers.*

561. *Bulbs* are, properly, underground stems which send upwards their leaves and flower-scapes, and downwards their true roots, as may be seen in hyacinths and tulips, when grown in glasses. What are commonly called bulbs are of three kinds: namely, the tunicated, which consist of a number of coats or tunics, which may be peeled off one after another, as in the

onion and the hyacinth; the scaly, which consist of large fleshy scales, adhering together only at the root, as in the lily; and the solid, which consist of a homogeneous, white, nut-like mass, as in the crocus, and which, indeed, are not bulbs, but corms.

562. *The culture of bulbs* is a matter of much difficulty. It was formerly supposed to be necessary to take up all the kinds as soon as they had done flowering; as it was found that if left in the ground, comparatively few survived the winter, being destroyed not so much by cold as by damp. Most bulbous plants are natives of hot dry countries, where they have alternate seasons of excessive rain, and excessive drought; and where the extraordinary provision of feculent or starchy matter laid up in the bulb, is necessary to supply nourishment to the leaves and flowers during their rapid growth in the rainy season; as at that season they want food faster than it could possibly be taken up by the roots and leaves. When the plant has done flowering, all this matter is exhausted, and only the membranous part is left. The plant, when left in the earth, then begins, through its leaves and roots, to take up sufficient nourishment from the soil and air to form a new bulb; and this process of alternate exhaustion and replenishing goes on every year, if the bulb is kept dry while it is in a state of repose. If, however, the bulb is exposed to moisture during the winter, the starchy matter laid up in it is dissolved too soon, as in winter there is not light and heat enough for it to develope its leaves and flowers; and consequently the bulb rots instead of germinating. It is on this account that bulbs are generally taken up as soon as they have done flowering, and their leaves have begun to decay, and replanted in spring. If, however, they can be kept dry, it is much better to leave most of the kinds in the ground all the year, as then they form masses of bulbs, which, from their roots never being disturbed, grow with extraordinary vigour, and flower splendidly. All the kinds which are called corms, such as the gladioli, the different kinds of crocus, and nearly all the Cape bulbs, succeed best when treated in this manner; but choice hyacinths and tulips are still generally taken up as soon as the leaves begin to decay, as the flowers are said to degenerate if the bulbs are left all the year in the ground.

563. *List of hardy ornamental flowering bulbs and corms, to be planted in beds or borders.*

	Time of Flowering.	*Colour.*	*Height.*
Tigridia pavonia (*Tiger flower*)	May	Orange	1 to 2 ft.
——— conchiiflora	——	Yellow	——
Scilla bifolia (*Squill*)	March, April	Blue	3 in.
——— sibirica	——	——	——
Ornithogalum narbonense (*White Star of Bethlehem*)	July	White	1 to 2 ft.
Narcissus Jonquilla (*Jonquil*)	May	Yellow	9 in.
——— Bulbocodium (*Hoop Petticoat*)	April	——	6 in.
——— Ajax	——	——	1 ft.
Muscari moschatum	May	Blue	4 in.
——— racemosum (*Grape Hyacinth*)	April	——	——
Leucojum vernum (*Snow-flake*)	Feb. and Mar.	White	9 in.
——— æstivum (*St. Agnes's Flower*)	May	——	12 to 18 in.
——— autumnale	September	Pink	9 in.

	Time of Flowering.	*Colour.*	*Height.*
Iris germanica *(Flag-flower)*	May	Purple	3 ft.
——— fragrans	June	Blue	1 to 2 ft.
——— lusitanica	May	——	——
——— xiphiöides	June	——	——
Galanthus nivalis *(Snowdrop)*	Feb. March	White	3 in.
Fritillaria imperialis *(Crown Imperial)*	April	Yellow	3 ft.
——— pyrenaica	June	Purple	1 to 2 ft.
——— lutea	April	Yellow	1 ft.
Lilium bulbiferum *(Orange Lily)*	June	Orange	3 ft.
——— candidum *(White Lily)*	——	White	——
——— Catesbæi	July	Scarlet	——
——— japonicum *(Japan Lily)*	——	White	——
——— Martagon *(Turk's Cap)*	——	Purple	——
——— tigrinum *(Tiger Lily)*	——	Orange	——
Colchicum autumnale *(Meadow Saffron)*	September	Purple	4 in.
——— variegatum	——	Light Purple	——
Gladiolus communis *(Corn-flag)*	June, July	Red	2 ft.
——— cardinalis *(Scarlet Corn-flag)*	July and Aug.	Dark Red	3 to 4 ft.
——— psittacinus *(Parrot-flower)*	August	Scarlet and Yellow	4 ft.
——— byzantinus	June	Purple Red	2 ft.
Crocus, different sorts	Mar. and Apr.	Various	3 in.

564. *Tubers* closely resemble in their nature what are called solid bulbs or corms, and appear to be reservoirs of nourishment which have been laid up by nature for the support of the infant plant. Some tubers have numerous buds in different parts of their substance, like the potato, and others have only buds in the upper part, like the Dahlia and the Ranunculus.

565. *The culture of tubers* depends in a great measure upon their nature; and the principal tubers grown in the open ground being the Ranunculus, the Anemone, and the Dahlia, we shall say a few words on each separately.

566. *The Ranunculus.*—The species of Ranunculus may be divided into two kinds: border flowers and florists' flowers. The latter consist of some hundreds of varieties obtained from the species *Ranúnculus asiáticus*, a native of the Levant with tuberous roots, which is rather too tender to endure the winter in the open air without some kind of protection. The wild plant grows naturally in Persia, in meadows which are moist during winter and in the growing season, but dry during great part of summer. Hence, one of the first requisites in the culture of this flower is a loamy soil kept moist; and as the varieties are all double, and in a highly artificial state, the soil requires to be made very rich with leaf mould, or the mould of hotbed dung. The common season for planting the Ranunculus is November; the roots may be placed about six inches apart every way, covered with two inches of soil, and protected by straw, mats, or rotten tan, during severe frosts. The plants will come into flower in July, and when the leaves wither, the roots may be taken up, dried in the shade, and preserved in a dry place till they are wanted for replanting. A great many named kinds may be procured in the seed-shops, the most distinct of which are the Turban, or very dark red, the orange, the white, and the fine or cut-leaved. As the plant seeds freely, even when semi-double, new sorts without end may be raised from seed, which may be sown in pots or flat pans as soon as it is gathered, and placed in a cold frame. Those persons who wish to grow the Ranunculus as a prize flower, should consult Hogg's *Treatise on the Ranunculus*, or some other work exclusively devoted to florists'

flowers; but for private gardens, it may be sufficient to remark the following particulars. The tubers, if kept dry, will retain their vitality for two or three years; and hence, if roots which should be planted in November are kept out of the ground till the November following, and then planted and protected from frost, and when they appear above ground put into greenhouse heat, they will flower at Christmas. If not planted until December, they will flower about the end of January; and if not planted till January, they will flower in March. In this way, by always having a stock of old roots, and planting some every month in the year, Ranunculuses may be had in flower all the year round.—(*Ladies' Companion to the Flower-Garden.*)

567. *The Anemone* is treated in the same manner as the Ranunculus.

568. *The Dahlia.*—The importance that has within the last few years attached to the Dahlia would render it easy to fill a volume with descriptions of its various species and varieties, and the details of their culture. Its history is also somewhat curious, as, strange to say, though it has become so great a favourite, and is so universally cultivated, the history of its introduction is very obscure. It is generally said to have been introduced by Lady Holland in 1804; but the fact is, it had been introduced many years before that period, and was only brought from Madrid, in 1804, by Lady Holland, who apparently did not know that it was already in the country. The first kind of Dahlia known to Europeans (*D. variábilis*, Dec.) was discovered in Mexico by Baron Humboldt in 1789, and sent by him to Professor Cavanilles, of the Botanic Garden, Madrid, who gave the genus the name of Dahlia, in honour of the Swedish professor Dahl. Cavanilles sent a plant of it the same year to the Marchioness of Bute, who was very fond of flowers, and who kept it in the greenhouse. From this species nearly all the varieties known in the gardens have been raised; as it seeds freely, and varies very much when raised from seed. In 1802, a second species (*D. coccínea*) was introduced from France, in which country it had been raised from Mexican seeds. A few varieties have been raised from this kind, but they are much smaller than the others. It is rather remarkable, that the two species do not hybridise together; and the first kind produces flowers of colours so different as crimson, purple, white, yellow, orange, and scarlet, without hybridisation. Among all the colours, however, displayed by these varieties, no flowers have yet appeared of blue, and comparatively few of a pure white. These two species, and their varieties, were the only Dahlias known in English gardens for many years; as though a few kinds were introduced from time to time from France and Spain, yet as they did not hybridise with the others, and were rather more tender, they were not generally cultivated, and appear to have been soon lost.

The Dahlia is a tuberous-rooted plant, which is propagated either by seeds, or by division of the root. The seeds are chiefly used for raising new sorts; and they should be treated like tender annuals, being sown on a slight hotbed, in February or March, and planted out in May. The plants rarely flower the first year, but the tubers will form in the course of the summer, and may be taken up in autumn with those of the old plants. When the plants are propagated by division of the root, care must be taken that each piece has a bud attached to it. These buds, or eyes, as gardeners call them, are not scattered all over the tubers, like those of the potato, but collected in a ring round the collar of the root. These eyes, when the tubers are in a dry state, are sometimes scarcely perceptible; and to discover them nurserymen often plant

their Dahlia-roots in a hotbed, "to start the eyes," as they call it; that is, to force the latent buds sufficiently forward to show where they are situated, before they divide the tubers for the purpose of forming new plants. Sometimes the eyes do not form a ring round the collar or crown of the root, but a considerable portion of it is without any buds. These parts, when divided from the rest, are called blind tubers; and, though, if put into the ground, they will live for several years, sending out abundance of fibrous roots every year, no gardener has yet been able to induce a blind tuber to form an eye, or to send up a shoot. Dahlias are also propagated by cuttings of the stem, taken from the lower part of the plant; or young shoots slipped off the tuber, with part of the woody fibre attached. The cuttings should be struck in sand, or very sandy loam, under a bell-glass, and with bottom-heat. Great care should be taken to shade them from the direct rays of the sun, till they have thrown out roots; as the leaves are easily withered, and when this is the case they cannot be recovered, and the cutting will perish for want of a due circulation of the sap. The roots will generally form in a fortnight, or, at most, three weeks. The best soil for Dahlias is a compost of equal parts of sand and loam, with a little peat; which may be enriched with part of an old hotbed, or decayed leaves. Manure of any kind should, however, be used very sparingly; as too much will cause the plant to produce strong, coarse-growing leaves and stems, instead of fine flowers. Striped flowers are never either bright or distinct in their colours in very rich soil. Dahlias will not grow well in the richest clayey soil without sand; and though they will grow freely in sand without loam, the flowers will be poor and only semi-double. Though they flower so late in the year, Dahlias are killed by the slightest frost; and thus their beauty, great as it is, is generally rather short-lived. As soon as the leaves turn brown from frost, which is generally in October, the stems should be cut down; and in November the tubers should be taken up. A dry day should be chosen, if possible; and the tubers should be carefully taken up, and laid on boards in an open shed, or some similar place, to dry. While drying they should be turned every day, and the earth that falls from them should be swept away. They should be dried in an open shed, if possible, where they will be only sheltered from the rain; for if dried suddenly by fire-heat, or exposure to the sun, the tubers are apt to wither up; and if dried too slowly, without the admission of plenty of air, they will rot. They generally do best kept during the winter in a dry cellar, in sand or sawdust; but any dry place will do, which is not too hot. In spring, the tubers are replanted, either in pots plunged in a slight hotbed, about the middle of February, or the beginning of March, or in the open ground in May or June; but the dwarf early-flowering kinds may be planted in the open air in April. When the tall kinds are wanted to flower early, they may be forced rapidly forward by being plunged into stronger heat, and kept in the hotbed till just ready to flower. If, however, the summer should prove hot and dry, the plants thus forced are frequently attacked by a disease called the curl, which is caused by an insect known by the name of the green bug, that perforates the young leaves, and occasions them to wither and shrivel up.

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569. *The operations of gardening* will be found in various parts of the twin volume, *The Horticulturist.*

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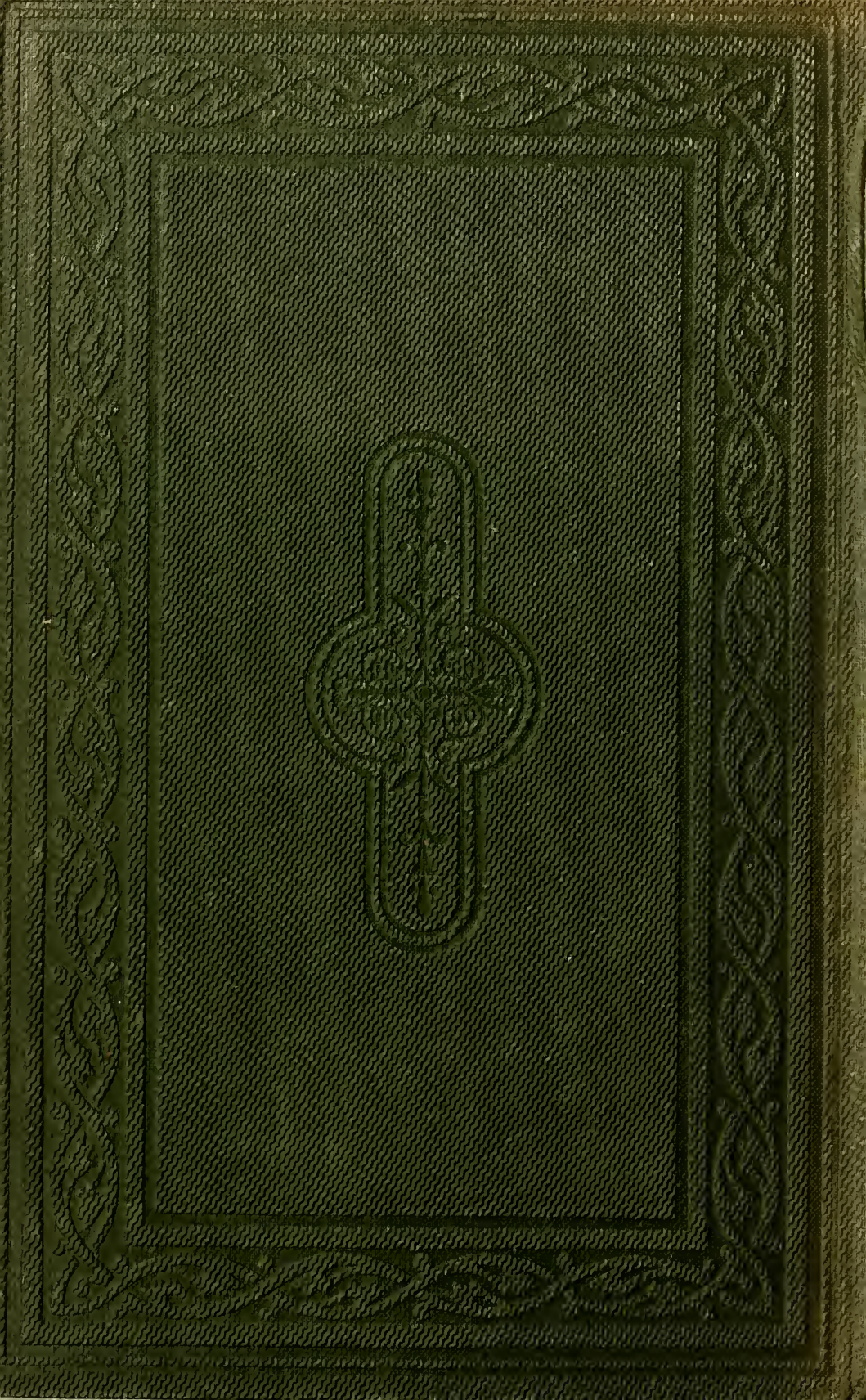
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